A History of

CHINESE AVIATION

Encyclopedia of Aircraft and Aviation in China until 1949

Lennart Andersson

AHS of ROC

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Published by AHS of ROC

Avro Avian "Amoy/Hsia Men" was purchased in Great Britain for the Chinese Naval Air Service in 1929. It was intended to fly the aircraft all the way to China and for that reason it was registered as X-CRIA. Chen Wen-lin, a Navy officer who had received flying training in Germany and later became Chief of the Naval Aeronautical Bureau in Amoy, and Danish-German Lieutenant Christian Johansen, employed by the Navy as flying instructor, departed from London on 13 March 1929 and landed at Amoy to months later.

A History of Chinese Aviation. Encyclopedia of Aircraft and Aviation in China until 1949

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Text and layout: Lennart Andersson
Colour profiles, cover design and final adjustments: Gary K. Lai
Production: Liang-Yen Wen

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AHS of ROC
P. O. Box 112-129
Taipei, Taiwan, ROC
Phone: +886-918-361-576
e-Mail: fujinping@gmail.com

Preface

This book is a detailed study of aviation in China before 1949. It is based on original reports and other material found in American, British, French, German, Russian and other archives, as well as contemporary newspapers, magazines and books. Modern books and articles, including Chinese publications on aviation history, have been used as well. Only a few original Chinese documents have been available.

An interesting observation is that even in those days Chinese aviation was so extensive and diversified that no matter how well it is described, new aspects and details will always emerge. My list of aircraft types employed in China was long from the outset, but from time to time during the research for the book new types were discovered and added. Their use in China was previously unknown and consequently there is no mentioning of China in published histories about several of these aircraft types.

The main scope of the book is aircraft and aviation in China during the period prior to 1937. As Chinese Air Force operations, especially during the war with Japan, have been treated elsewhere such aspects are normally not detailed here. For the 1937-1949 period the focus is mainly on aircraft acquisition and organisation, and general development of aviation in China.

I would like to point out that the book has been produced as a long time non-profit hobby project by me and Dr Liang-yen Wen. Scanning, image processing, design and layout has been done by me and Dr Wen has arranged the printing. This means that the book has been produced without the economic resoures of a commercial publisher and it must be judged with consideration to these circumstances.

Uppsala, Sweden, September 2007
Lennart Andersson

Introduction

A system with local "warlords" (chün-fa) ruling a province or a group of adjoining provinces in a near feudal way became common in China after 1919. The warlord had an army, which was loyal to him personally, often all the way down the chain of command. This meant that any commander who could be subverted normally also brought over all of his subordinates, and that allegiances and loyalties were of great importance in Chinese politics. The warlord had autonomous control of a territory that provided the revenues needed to support his troops. He usually kept his armies concentrated near his headquarters in order to avoid commanders of separate garrisons becoming too independent.

The warlord was normally the military province governor (tu-chün or tu-pan). The various national governments often tried to get warlords under their control by providing money, but any warlord who desired to be independent could collect his own taxes. A general who became a warlord normally promoted his relatives and subordinates who had aided him. Military rank at higher levels often had little meaning. There were many "generals" in China.

The armies were armed with rifles and heavier weapons were available only in small numbers. Many warlords understood the importance of aviation and most tried in every way to get hold of a few aircraft. On the other hand knowledge about aviation matters was scarce and Western firms often managed to sell light civil aircraft types and miscellaneous obsolete aircraft in China, totally unsuitable for war purposes. A typical warlord air force consisted of a motley collection of aircraft of different makes and different ages, most of them unserviceable due to crashes and lack of spare parts.

Local arsenals produced rifles, but aircraft normally had to be imported. On 5 May 1919 an international Arms Embargo Agreement was signed, which was designed to prevent the importation of arms into China. The USA proposed the embargo and the signers included the USA, Great Britain, France, Russia, Japan, the Netherlands and Italy.

These countries charged each other from time to time with violations and evasions of the agreement and in fact the embargo did not stop the import of arms to China, it just limited it. Some nations, Norway being one example, never signed the agreement and were used as instruments to circumvent it. It is an historical fact that the British and American Governments endeavoured to adhere to the agreement, while French, Italian and German firms, and later the USSR, were secretly supplying aircraft and other arms to China. The embargo was in force until 28 April 1929.

All provincial governments that acquired aircraft developed aviation as a means of strengthening their military forces. Even the commercial airlines that were organised often served military purposes.

Aviation was first utilised by the Republican Government in Peking. When the warlord era started most of the numerous British-built aircraft at Peking were taken away to Mukden, Paoting and other places to form the nucleus of new local air forces. The Manchurian Air Force soon became the largest in China. Other warlords and provincial governments followed suit and purchased aircraft. The so-called Central Government in Nanking later started to build an air force based on the remains of the first Canton Air Force, but not until after several years did the Nanking Air Force, later known as the Chinese Air Force (CAF), become the largest and most powerful air force in China.

An interesting aspect of Chinese aviation is the different character of the local air forces. They were sometimes geographical entities bound to a certain place, sometimes personal organisations bound to the warlord. Some "air forces" were little more than a fleet of personal aircraft, others were comparatively well-equipped fighting forces. For example, when the National Revolutionary Army (NRA) captured Shantung in 1928 the entire Shantung Air Force was moved by Shantung warlord Chang Tsung-ch'ang from Tsinan to Mukden, Manchuria, to escape being captured by the enemy. On the other hand Lu Yung-hsiang's air force, which was based at Lunghua, Shanghai, was left in situ and was taken over by Sun Ch'uan-fang, when he defeated Lu in October 1924. Sun's air force was then in turn taken over by Chiang Kai-shek's NRA, when they reached Nanking in March 1927!

After the Nanking Government had attempted without success to gain control of all provincial aviation activities late in 1932, the Executive Yuan promulgated orders that no military aircraft may be purchased by military units, provincial governments or other bodies. The organisation of an air corps or aviation unit by any military organisation was prohibited unless authorised by the Central Government. Import permits, so called huchaos, were to be granted to provincial governments for training and commercial aircraft only.

This order was directed especially against the Canton and Fukien governments, which had just announced aviation expansion programmes. The prohibitions could of course only be successful where the ports of entry were controlled by the Central Government. For example, the import of undesired aircraft into Szechwan could be partly prevented because most war supplies had to be transported by way of the Yangtze River and could therefore be stopped by Nanking.

On the other hand, aircraft could be imported to Szechwan through Yünnan as well. South China, having its own ports and controlling its own finances, could continue to import aircraft and develop independent air forces in Kwangtung and Kwangsi. These provinces often turned to Great Britain for aircraft, which were imported via Hong Kong, where the Nanking government could not interfere.

There was strong foreign influence in Chinese aviation. Most warlords employed foreign advisers and instructors, mostly from France, Germany, Great Britain, the USA and the USSR. The Nanking Air Force (later the CAF) used the services of German advisers, from 1929 until 1931, some even staying until 1937. During the periods 1933-35 and 1937-38 there were American advisers and Italians advisers were employed between 1934 and 1937. The Russians took over in 1938, and from 1941 all advisers were American. Civil aviation, mainly the CNAC and Eurasia airlines, was dominated by Americans and Germans.

Many foreigners found employment in China as flying, mechanical and other types of instructors. Taking the Nanking Air Force as an example, German instructors were employed in 1928-31 and there were a few Americans as well in 1930-31. An American mission was responsible for CAF training during the 1933-35 period and an Italian mission was active in China between 1934 and 1937. From the mid-1930s a number of American instructors were hired and during the period 1937-41 there were a number of Russian instructors.

Aircraft were often acquired from many sources but a certain periodical division can be distinguished. Most aircraft purchased in 1920-21 originated from Great Britain, and in 1922-25 and during 1928 France dominated the China market. German aircraft were purchased in 1927 and 1929, American aircraft in 1930-1937, Soviet aircraft in 1938-41 and American aircraft exclusively thereafter. The very large Soviet deliveries of enormous quantities of aviation equipment during the late 1930s were exceptional and interestingly similar to American Lend-Lease supplies over Alaska and Siberia to the USSR in WW II. Aircraft were sent or flown over long distances and geographical and climatic conditions were difficult and extreme. Later American deliveries under Lend-Lease to China were made via Burma and India under conditions that were similar, but not as difficult.

Names of Places, etc

On 20 June 1928, Peking, or Peiching (Northern Capital), was renamed Peiping (Northern Peace), after Nanking had been proclaimed new capital of China. Peiping was changed back to Peking in 1949. For the sake of simplicity the name Peking will be used throughout this book. The old suffix "-fu" for cities had been dropped, but was still used by Westerners in the 1920s and 1930s. It has been used in this book only to differentiate between Yünnanfu (later Kunming), the city, and Yünnan, the province.

There is considerable confusion about the exact names and functions of the directing offices of the Nanking Air Force. The terms aviation bureau, aviation department and aviation administration seem to have been used indiscriminately and the same applies to their use in this book. The corresponding Chinese terms are Hang k'ung ch'u, Hang k'ung chü, Hang k'ung pu, Hang k'ung shu, and sometimes Hang k'ung ssu.

The transcription (Romanisation) of Chinese names has been one of many complicated tasks associated with the preparation this book. Transcription systems differ between languages and over time. The manuscript was written in English, but as not only American and British reports, but also French, German and Russian material has been used, in addition to transcribed Chinese sources, things got rather complicated. Another problem is that many Westerners wrote down the Chinese names as they thought they sounded and never bothered to find out the correct Chinese characters and their transcription. As Chinese is of course not spoken in the same way all over China the result can be quite confusing.

I have chosen to try to adhere to the so-called Wade-Giles transcription system, which was the most widely used during the period before 1949. It was the official international standard until 1972 and is still used in Taiwan. Today the most usual form is Pinyin, which was imposed by the

People's Republic of China as international standard. There are chronological, political and other aspects to the problem, but I felt that the Wade-Giles system is most coherent with the subject of the book. I am sure that the linguistic purist will find many mistakes, however, as transcription vary in the original documents that I have used. It has often been difficult to sort out the most correct variant of a Chinese name. Sometimes an alternative is put in brackets. Several well-known Chinese pilots, especially those born in the USA, had a Western name, or nickname, in addition to their Chinese name.

Acknowledgements

A great number of people have been very helpful in this project. Much of the information contained in the book and many of the photos could never have been obtained without them. Clarence Fu sent much information and many photos and has provided ongoing support for many years. He also patiently helped me to understand some linguistic matters. Ian Johnson sent numerous copies of the very valuable South China Morning Post and shared information, especially on aviation in Hong Kong, as well as photos.

Martin Best, Gary Lai, Matthew Miller, Carl Modder, and especially Liang-yen Wen, who are all members of the so-called China Project Group on the Internet, have added considerable to my knowledge of Chinese aviation. C W Lam's website on aircraft in China and our discussions about aircraft names have improved this book considerably. Roberto Gentilli provided books, articles, photos and information on Italian aircraft in China. D Y Louie has exchanged information with me during a number of years and he has also provided extensive translations of Chinese publications.

Leif Hellström spent hours doing research on my behalf in the USA, supplied photos and also lent me a number of books. Marton Szigeti generously provided a large number of valuable photos. Miroslav Herold sent important information and a large number of photos and he also lent me books. Mike Watchman graciously arranged to make available for use in the book the photo collection of one of his relatives, Albert Wong Lee. Eric Chen was able to provide a translation of a rare original Chinese document. Michel Ledet took his time to check what could be found about Chinese aviation in French archives. Ron Davies made available a very valuable original CNAC fleet list. Discussions and initial exchange of information with Just Probst several years ago in fact provided the real starting point of this project.

Many thanks also to the following people, who have provided information and photos over the years: Dan-San Abbott, Gregory Alegi, Richard S Allen, Paul E Bezouska, Werner Bittner (Lufthansa), Tony Broadhurst, Pierre Cortet, John Davis, Richard DeAngelis, Malcolm Fillmore, Günter Frost, Jarek Garlicki, Frits Gerdessen, Dan Hagedorn, Gary Hammil, Harm J Hazewinkel, Roger Jackson, Philip Jarrett, Lennart Johnsson, Philip Jowett, Terry Judge, Volker Koos, Rob van Lijf, Lars Lundin, L Morareau, Harry Nakano, Günther Ott, David Partington, Herluf Rasmussen, Lisa Schwarzenholz, Stéphane Soulard, Ray Wagner, Bodo Wiethoff and many, many others.

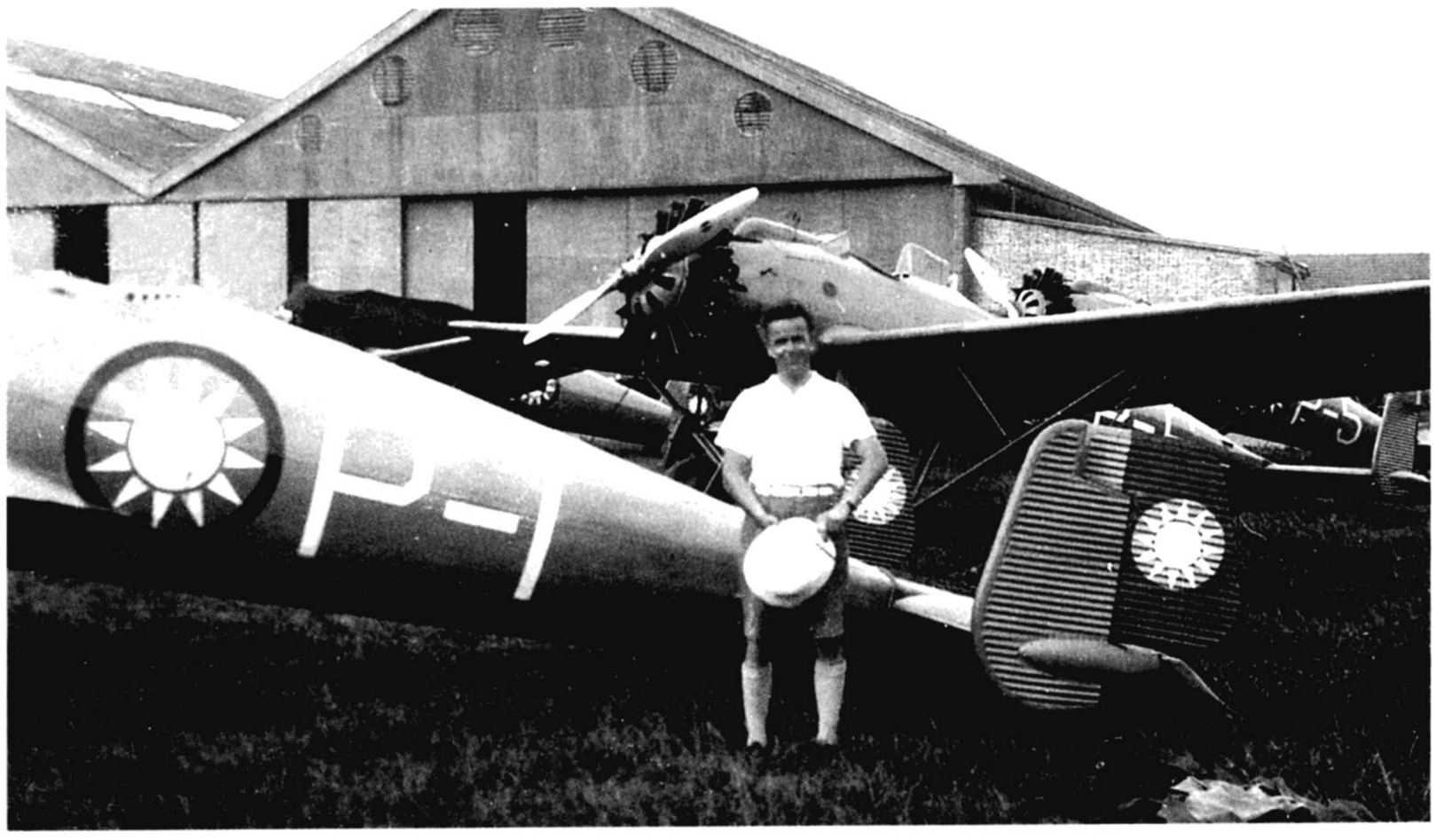
Finally, I would like to point out that this book might never have been published had not Dr Liang-yen Wen, enthusiastic Chinese aviation historian, initiated a special project to that end! I am very grateful for this and for his kind and devoted support in every way.

Photo Credits

Many photos used in this book come from the Author's own collection. Some were sent to me a long time ago without any information about their origin and some photos have come from more than one person. Dr Liang-yen Wen has provided a lot of photos from his own collection as well. Many other photos were provided during the work with the book but have not been used.

In most cases the original photographer is not known. Although I have endeavoured to give credit to all photo contributors here, I realise that some will miss their names and I offer my sincere apologies for that. Almost nine hundred photos were used in the process of selecting illustrations for the book and making the layout.

In addition to those already mentioned above, "Wings of China", the Chinese Aviation Historical Society (Chinese Aviation History Club), Chung-Yang Lowe and I-fu Tseng supplied photos during the final phases of production.



Seven Junkers K 47 two-seat fighters were acquired by the Chinese Air Force in 1931. The Canton Government ordered another three, which were impounded by Nanking and incorporated into the CAF as well.

The Chinese Provinces

Governments and Provinces Involved in Aviation

Central Government	Nanking
Republican Government	Peking
Chahar	Kalgan
Chekiang	Shanghai
Chihli	Paoting
Fukien	Changchow, Fuchow
Honan	Loyang, Kaifeng
Hunan	Changsha
Kiangsu	Nanking
Kwangsi	Nanning, Liuchow
Kwangtung	Canton
Kweichow	Kweiyang
Manchuria (Fengtien)	Mukden
Shansi	Taiyüan
Shantung	Tsinan
Sinkiang	Urumchi (Tihwa)
Szechwan	Chungking
Yünnan	Yünnanfu (Kunming)

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Abbreviations

AVG - American Volunteer Group
CACW - Chinese-American Composite Wing
CAF - Chinese Air Force
CAMCO - Central Aircraft Manufacturing Corporation Company
CAT - Civil Air Transport
CATC - Central Air Transport Corporation
CNAC - China National Aviation Corporation
CNRRA - China National Reconstruction and Relief Administration
CofA - Certificat of Airworthiness
FEACo - Far East Aviation Company
FEFTS - Far East Flying Training School
FTS - Flying Training School
KMC - Kuominchün (National Army)
KMT - Kuomintang (Nationalist Party)
MKKK - Manshu Kokuyusho Kabushiki Kaisha (Manchu Air Transport Company)
PLA - People's Liberation Army
SWAC - South Western Aviation Corporation
USAAF - United States Army Air Force

Early Aviation in China

The First Aviators

Leaving balloons and kites out of the account, it seems that the first aviators in China were the Americans Thomas Baldwin, Todd Schriver and James McBride, who arrived with their aircraft in Hong Kong on board the SS "Asia" on 31 December 1910. They were unable to get a permission to fly in the colony, however, and left for Manila in February 1911.

Belgian pilot Captain Charles Van den Born of the Far East Aviation Company was making exhibition flights in Asia and in December 1910 he was sent to Saigon, French Indochina, with three Farman biplanes. In February 1911 he arrived in Hong Kong on board SS "Donai" and the Hong Kong authorities, which some months earlier had refused the American aviators' applications, permitted him to fly there. On 18 March 1911 the first flight ever in Hong Kong was made with Farman II "Wanda". After making several other flights Van den Born continued to Canton with his aircraft. He flew there on 18 April, but had to leave in a hurry when a general, who had been watching his display, was assassinated and "Wanda" was burnt.

Another foreigner, French aviator René Vallon, came to China with a Sommer biplane on 10 January 1911[1]. After repairing his aircraft, which had been damaged on the way out, he made a number of exhibition flights at Kiangwan, near Shanghai, in March and April. On 6 May he crashed on the Shanghai Racecourse, however, and was killed instantly. These activities and news about aviation caught the imagination of many young Chinese and soon some of them were learning how to fly an aircraft.

In November 1911 a group of young air-minded Chinese in the USA learned to fly and purchased six Curtiss Pushers. This group included Tom Gunn (T'an Ken-jen), Li Ch'i-an and Yu K'uei-wei. When these aircraft arrived in Shanghai in January 1912 some were sent to Nanking and some were stored at Kiangnan. One was assembled on 20 January but was damaged and in February Li Ch'i-an crashed another during the first test flight. These aircraft were then moved, probably to Canton, but their fate is not known.

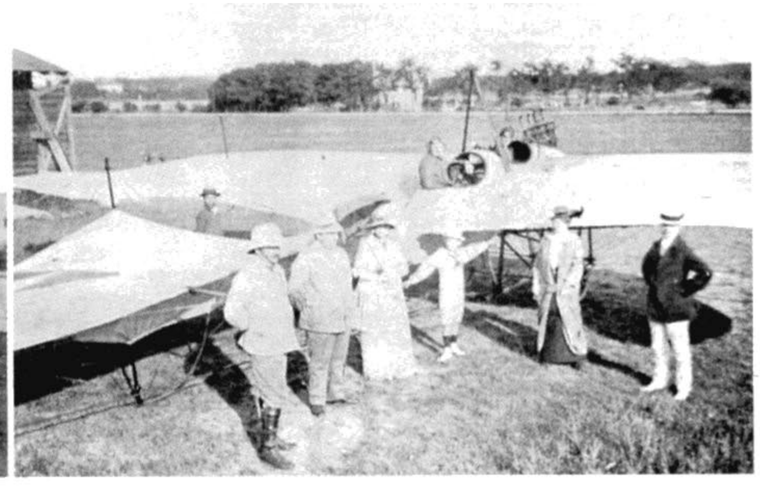
In the meantime Chinese-American Feng Yu (Fung Joe Guey) had built an aircraft, a Curtiss type pusher with 70 hp engine, in California and made frequent flights with it there. He left for Hong Kong in February 1911 and then continued to Canton. After assembling his plane he did some exhibition flying over Canton in 1912 but he was killed when he crashed into a bamboo thicket on take-off on 25 August 1912. Many Chinese pilots received their training in the USA, but Ch'in (Tsing) Kuo-yung gained his flying licence

[1] It has been widely but incorrectly reported that this happened in 1908.

Left: Farman II "Wanda" flown by Charles Van den Born in Hong Kong in 1911.

Right: Vallon's Sommer after the crash in Shanghai on 6 May 1911, which took his life.

Far right: German aviator Franz Oster's Rumpler Taube at Tsingtao.



at Saint-Cyr in France. He brought a Caudron with him back to China and on 6 April 1911 he took off for the first time with this machine from Nanyüan outside Peking.

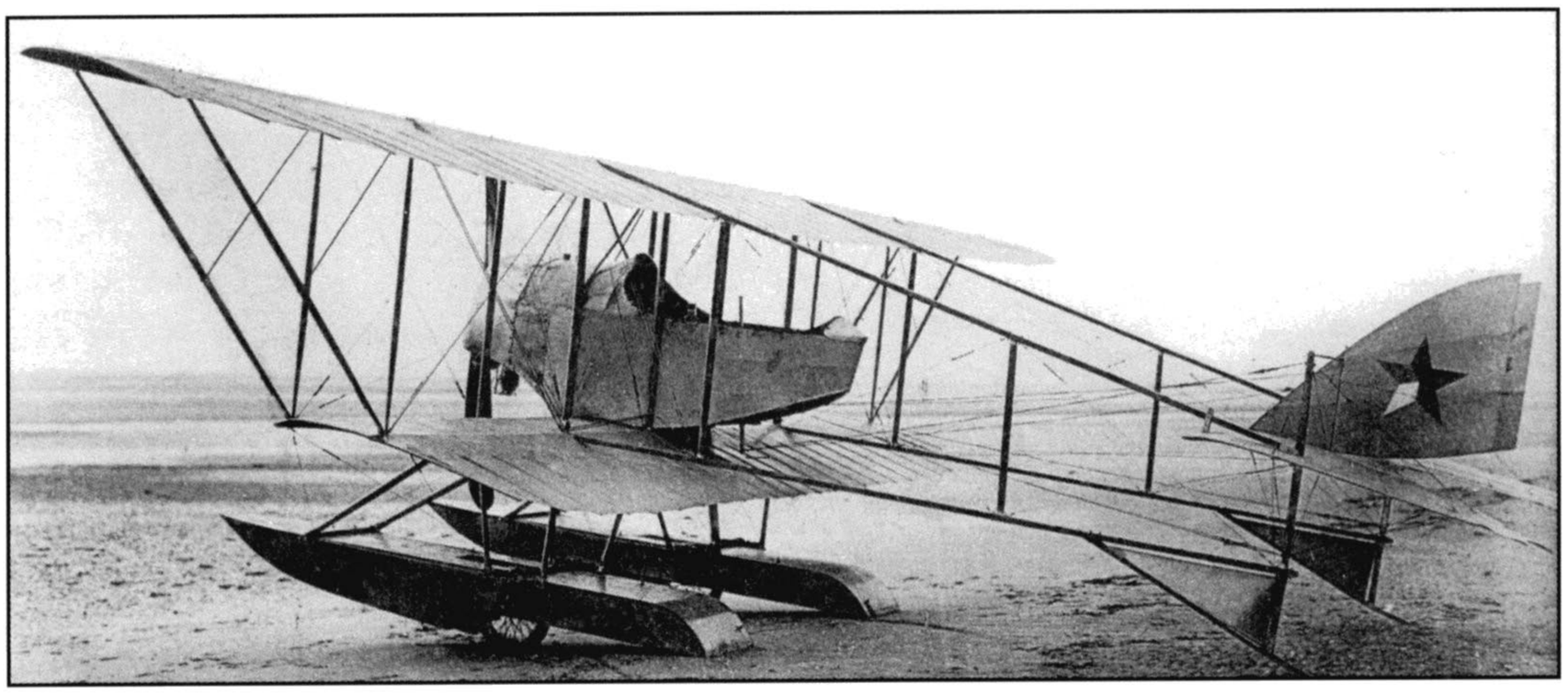
Another foreigner, Russian Aleksander Kuzminsky, departed from St Petersburg in April 1912 with a Blériot XI and travelled via Vladivostok, Harbin and Mukden to Peking, where he made the first aerial exhibition at the Legation Quarter. He visited Tientsin in October, proceeded to Hankow and Canton and finally made flights in Macao and Hong Kong in December. He then continued to Siam and the Dutch East Indies in February 1913.

In 1914 Lym Fuk-yen (Art Lym/Lin Fu-yuan), a graduate of the Curtiss School, San Diego, was on his way to Canton with his understudy Chan Pon and a Curtiss D Pusher, but his aircraft was seized by the Hong Kong Government on the outbreak of war. It was released in the latter part of 1915 and sent via Manila to Swatow, where it was used in a local war. According to an American report Lym brought two aircraft and one of them was wrecked and Lym broke a leg while making an exhibition flight at Swatow. Chen Kuei-p'an took another Curtiss D to Canton in July 1914, but crashed on the first test flight.

Famous Chinese aviator Captain Tom Gunn (T'an Kenjen) arrived in Hong Kong from Manila with SS "Mongolia" on 15 July 1915 and was received like a hero. He brought two Curtiss aircraft, a landplane and a hydroplane. In 1912 he had made exhibitions and stunt flying in California, where he was promoted and managed by Max Friedman, who followed him to Honolulu, where several flights were made, and then to Manila. Gunn flew the hydroplane on 7 August 1915 in Hong Kong and on 30-31 August in Macao. He then continued to Canton, where he was to play a prominent role in aviation, and aided by the US Consul he managed to have his machine shipped through to Canton after he had arrived there.

American aviatrix Katherine Stinson flew stunts over Peking in a Laird Looper on 17 March 1917. She had made an exhibition tour in Japan and had already visited Shanghai and now continued to Tientsin, Hankow and Nanking before returning to the USA in April 1917.

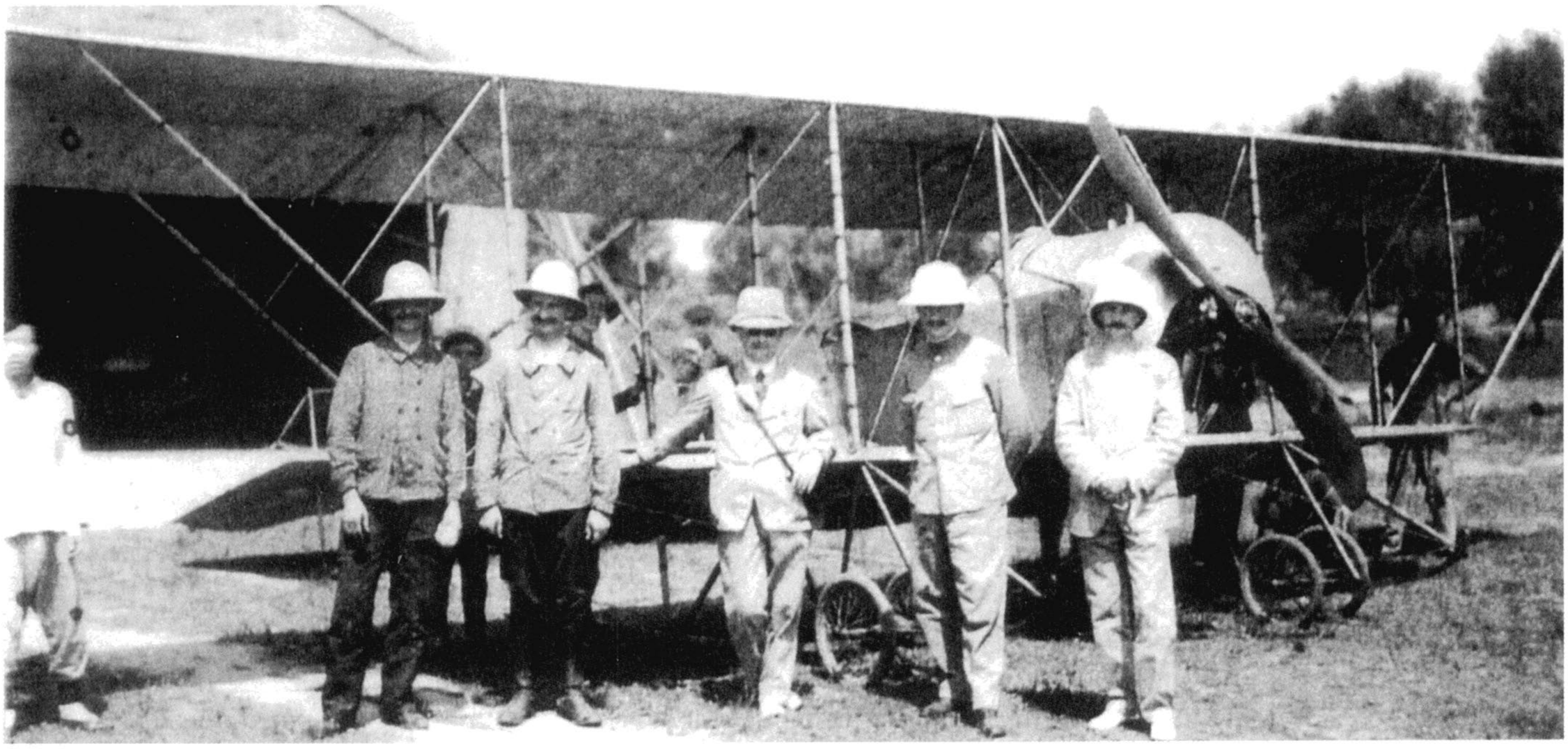
Peking (Republican Government)



Caudron G2 amphibian. Notice the national insignina introduced by the Peking Government in 1913.

In October 1911 revolution broke out in China. The last Manchu Emperor of the Ch'ing dynasty abdicated on 12 February 1912, and by that time a Provisional Republican Government was functioning. The seat of the Government was in Nanking, which became the new capital. The President of the Nanking government, Sun Yat-sen, resigned in favour of Yuan Shih-k'ai, who desired to get inaugurated in Peking rather than in Nanking, however.

The revolutionary Alliance Society (T'ung-meng hui) now changed its name into Kuomintang (KMT, the Nationalist Party) in anticipation of open elections and a democratic parliament in China. In May 1913 Yuan publicly



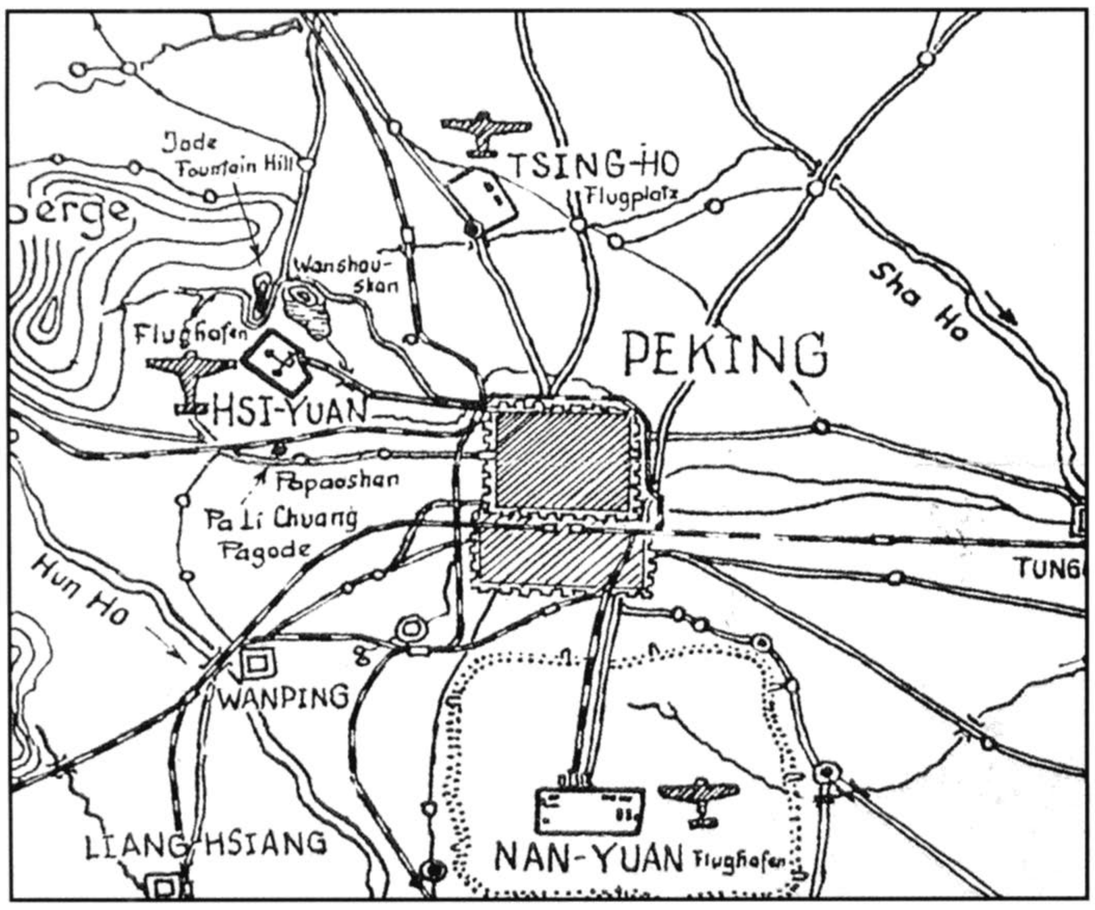
French personnel in front of a Caudron G.

repudiated the KMT. Sun Yat-sen, who was in Japan, returned and started to organise armed resistance to Yuan. The "Second Revolution" broke out in July 1913 but Yuan soon gained the upper hand and was finally elected President on 6 October.

In November 1913 Yuan issued an order to dissolve the KMT and by the beginning of 1914 he was working on an amendment of the constitution so that he could become emperor. The National Assembly was dissolved, and in December 1915 he finally proclaimed himself emperor, which put an end to the first Chinese republic.

Aviation

In October 1910 the French Blériot firm sent a representative, van Lerberghe, to Peking to try to sell eight single-seat and two two-seat aircraft to the Chinese Government and also offered to train Chinese officers in France. The proposal was not accepted, however. The Peking Government was reported to have purchased six Farman biplanes early in 1912, but, if true, those aircraft were never delivered.



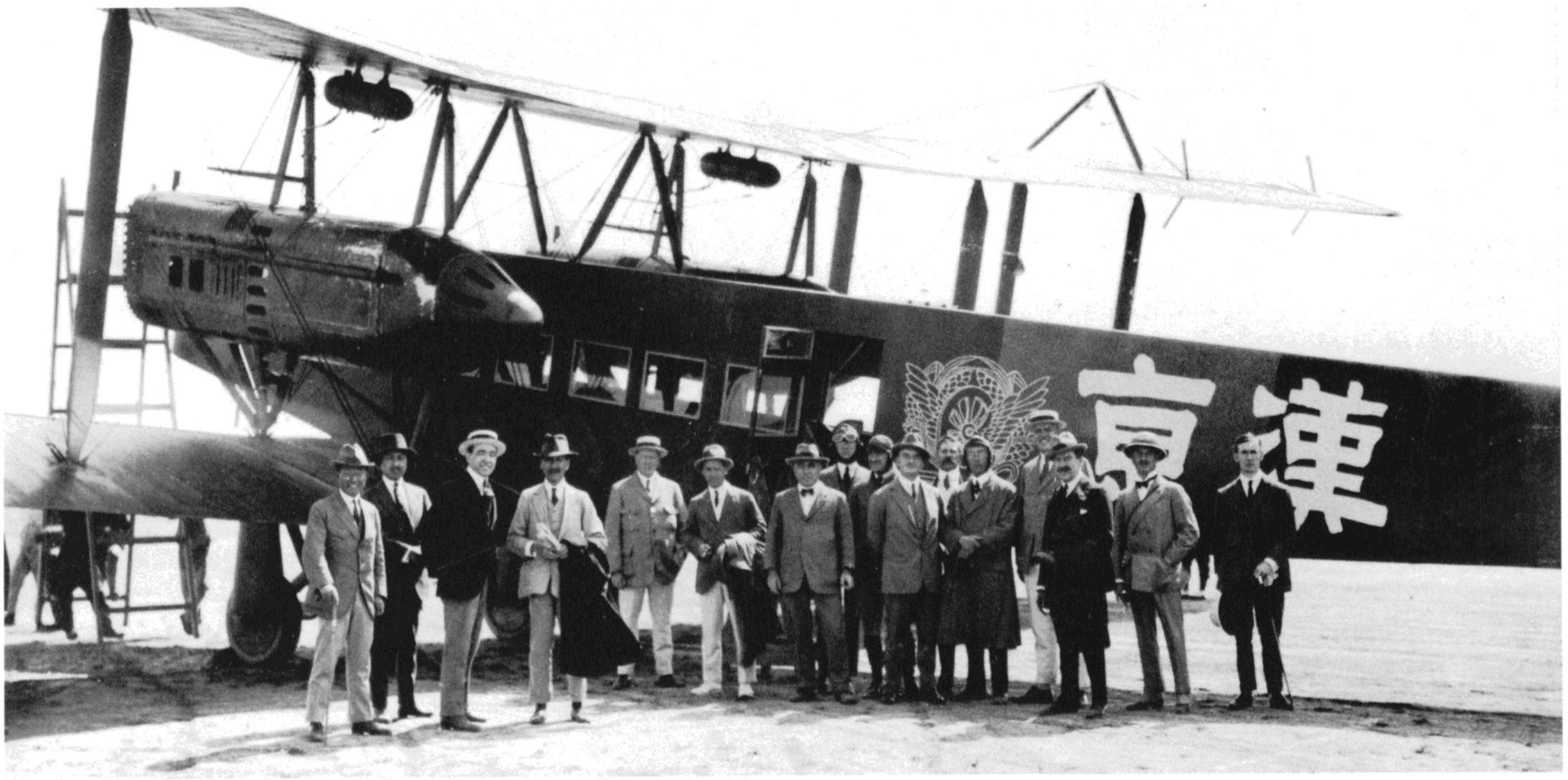
German map showing the locationsof the Peking aerodromes: Chingho, Hsiyüan and Nanyüan.

In January 1913 the new Republican Government announced its intention to establish a military aviation school. The general staff selected Nanyüan, South Hunting Park, 8 miles south of Peking, as the site of an experimental aerodrome and French Lieutenant Bon was engaged in December 1912 to direct the school. Plans for the school had been drawn up already in April and Bon had been approached in October and asked to make preliminary arrangements. The brain behind the plans was Lieutenant-Colonel Brissaud-Desmaillet, French military attaché to Peking, who acted as military adviser to Yuan Shih-k'ai. Ts'ao K'un, Garrison Commander and Commander of the 3rd Division, raised the money trough Vice-President Li Yuan-hung to purchase 12 Caudron biplane trainers and equipment for a workshop, which were ordered in January 1913[2].

Bon arrived in Peking in April 1913 and two French mechanics, Obre and Martineche, soon joined him. Obre was a pilot as well and replaced Bon as chief flying instructor in 1914. A French carpenter named Boffa was hired somewhat later than the others. Colonel, later General, Ch'in (Tsing) Kuo-yung was appointed director of the flying school and two Chinese instructors, Captains Tsao and Liu[3], were employed. A workshop was established for repairing

[2] Another four Caudrons, 19 engines and materials for local construction were later ordered but this contract was cancelled due to a lack of funds.

[3] This probably was Li Ju-yen.



Handley Page O/7 "Ching-Han" with the staff of the British Legation, May 1919.

aircraft. Captain Ou Chen-ki was appointed chief mechanic and head of the workshops at Nanyüan in April 1913, but he was to leave this post in April 1914. Flying instructors Tsao-Pe and Pan were added in November 1913. All these Chinese officers had received their training in France.

The crates containing the Caudron aircraft arrived in June 1913 and in July the first display of the new "air force" took place. The French colony in Peking was invited for the occasion. Three two-seat Caudrons with 80 hp Gnome engines, two single-seaters with 50 hp Anzani engines and one Gnome-powered amphibian (with both wheels and floats) were displayed. They had been assembled by the students of the newly opened Flying School under the supervision of Bon, Obre, Martineche and Boffa. The total order was made up of three Caudron D trainers, one model F, four model Gs and four model G 2s. René Caudron was present as the company representative to demonstrate the aircraft and take up passengers.

Flying cadets were appointed from Army and Navy officers, but only a relatively small number were to graduate from the school as qualified pilots due to frequent political disturbances in China. By November 1913 there were about 60 pupils at the school. Due to health reasons Lieutenant Bon went home in the autumn of 1913, Obre stayed one year extra after his first contract ended and Boffa and Martineche remained at least until 1918 and 1922, respectively.

By January 1914 the school had one Bessonneau hangar, two twin hangars, a Bessonneau shed, a store, a workshop, four petrol and oil storehouses, three school buildings and a hospital. The aerodrome measured 1,100 x 500 m. Airfields had been laid out at Paoting, Tientsin and Techou, 250 km south of Teintsin. During 1913 a total number of 85 students (60 pilots and 25 observers) were accepted, but only 48 of these eventually graduated. On 11 March 1914 the first long distance flight made by students took place between Peking and Paoting. In the following year 53 new students were accepted.

P'an Shih-chung[4] was appointed new Manager of the Nanyüan repair workshops, which soon started to experiment with construction of new aircraft. A monoplane designed by Emile Obre and fitted with a 50 hp Gnome engine was completed in November 1913. Between 1916 and 1918 the Nanyüan workshops built eight biplanes of indigenous design, four examples of a 90 hp tractor and four 110 hp pushers. In addition, at least one two-seat pusher biplane was built and fitted with an 80 hp Gnome engine taken from an unserviceable Caudron. It was armed with a Hotchkiss machine-gun.

On 13 May 1909 Sun Yat-sen is recorded to have said the following in a speech to his revolutionaries: "Flight training is a must to our party. We envision that aviators will play a vital role in our revolution in the future". In order to realise these thoughts he bought two Etrich Taube monoplanes from Austria in 1911 with money collected from overseas Chinese. The aircraft arrived in China only at the end of 1912 and on 15 January 1913 a demonstration flight was performed in Shanghai by Li Ju-yen (Zee Yee Lee), who had learnt to fly in Great Britain and who had also visited Austria. A number of exhibition flights were made and Li was referred to as "Commander of the National Revolutionary Air Corps". These Etrich Taubes were moved to Nanking in 1913 and reportedly ended up at Nanyüan.

[4] P'an Shih-chung (P'an Che-Tchong) received his licence in France at the Deperdussin school.

Second Aviation Centre

In the autumn of 1913 a second aviation centre was organised with Japanese aid by the Vice-President, General Li Yuan-hung, at Wuchang in Hupei. During the Revolution late in 1911 an aircraft had been ordered by Wang Chou-fan, a member of Li Yuan-hung's staff, from a Japanese referred to as "Yeou-Ngan" or "Yeog-Ngan". However, this machine was neither paid for, nor delivered. The Japanese firm Mitsui Bussan Kaisha later approached Wang Chou-fan with an offer for four other aircraft, a new contract was signed and in September 1913 one machine was reportedly test-flown at Wuchang.

Three Japanese instructors, named Ch'ang Chan, Chang Chou and Yu Tien in Chinese, arrived and were accommodated in the Wuchang Military School. Several buildings, a matshed and a hangar were erected and an airfield was laid out. The three Japanese supervised some fifty Chinese mechanics and workers. In November a number of large cases, which were reported to contain aircraft, were observed at the airfield. At the same time an aircraft engine marked "Aeronautics Construction Co, Detroit, Michigan, US" was under repair at a local workshop. It was said that two Chinese pilots trained in Japan had arrived with the Japanese personnel, and that one of them had flown to Nanking. Unfortunately nothing more is known about these aircraft and their fate.

When the need arose, the Caudrons at Nanyüan were used for reconnaissance and light bombing. During the fighting in Mongolia in the autumn of 1913 Pan Shih-chun was sent to the front near Kalgan with two aircraft (one 50 hp and one 80 hp), but only two flights were made before they had to be returned to Peking for repairs. An attempt to throw bombs was made, however. Another pair of 80 hp Caudrons went to Hunan via Hankow under the direction of Constantine, a Russian pilot hired by the Chinese Government, to accompany a division sent out to fight rebels. A few flights between Yochow and Changsha were made.

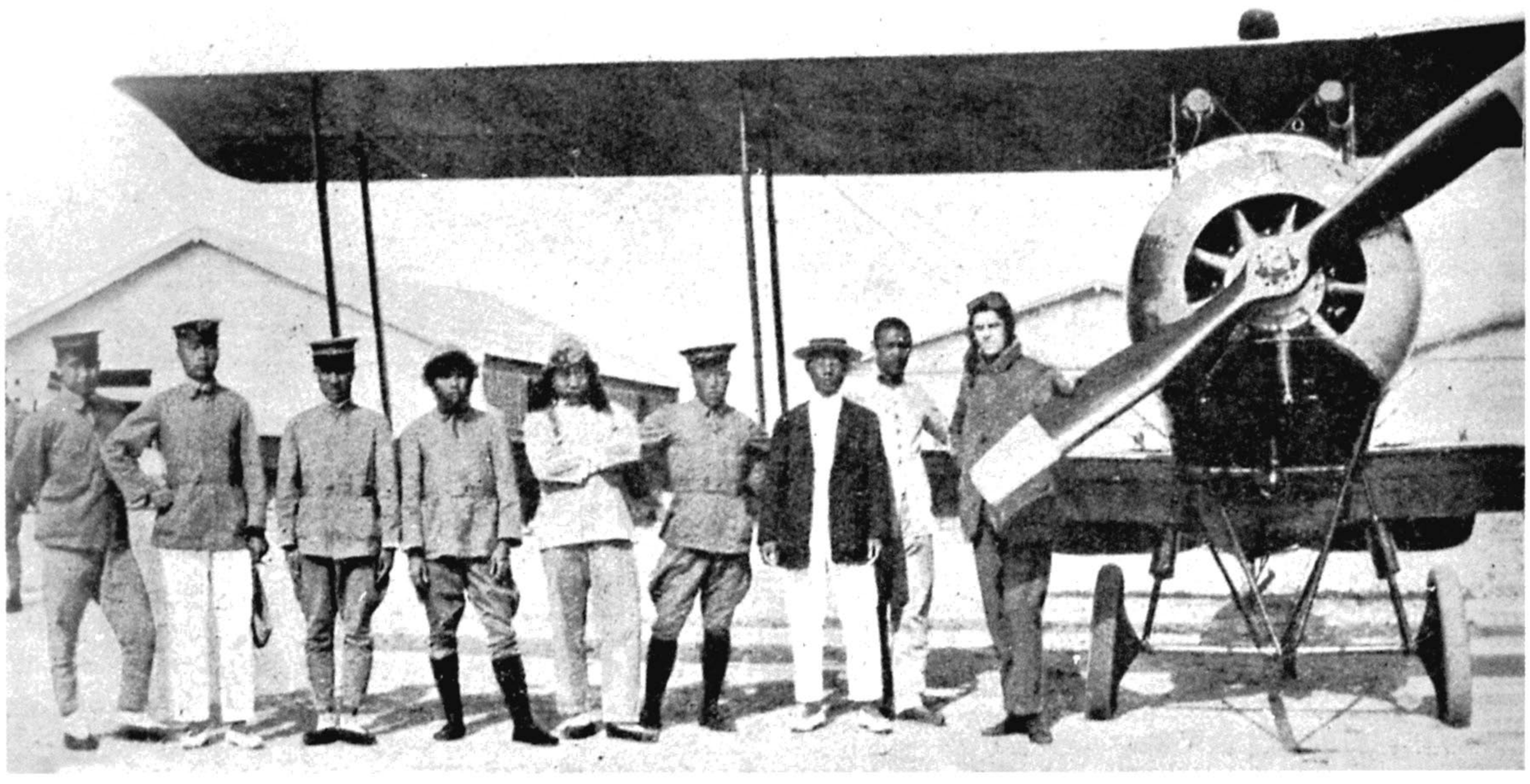
Early in 1914 a pair of Caudrons was sent to Honan to fight the White Wolf "bandits". On 22 February, for example, a successful reconnaissance flight was made. However, landing accidents soon put an end to operations after only a limited number of flights. On 6 April 1914 four Caudrons (three 80 hp and one Anzani) were sent out under the command of Colonel Tsing. The French mechanics serviced the aircraft, which were used in action, and this operation was considered a success. When the warlord of Yünnan started a revolt against Yuan Shih-k'ai, a number of aircraft were sent to the fighting area in January 1916.

After Yuan's death in June 1916 he was succeeded by General Li Yuan-hung. The Army split in two, the so-called Anhwei (or Anfu) clique led by Tuan Ch'i-jui, and the Chihli clique, founded by Feng Kuo-chang and then led by Ts'ao K'un and Wu P'ei-fu. Provincial armies were organised in Yunnan, Shansi (Yen Hsi-shan) and Fengtien (Chang Tso-lin). There was also an army in Kwangtung (Lu Jung-t'ing), where Sun Yat-sen later formed his own Canton government.

In June 1917 General Chang Hsun occupied Peking and in July an aircraft bombed the Imperial Palace. On 1 July Chang had proclaimed the restoration of the Manchu dynasty. This failed, however, when Tuan Ch'i-jui attacked Peking and Chihli clique leader Feng Kuo-chang assumed the presidency, the provinces Kiangsi, Hupei and Kiangsu becoming the bases of his strength. Tuan Ch'i-jui became Prime Minister and his military clique, the Anhwei, dominated the Peking area. In August 1918 Hsu Shih-ch'ang was elected president. From now on political instability and civil war raged in China.

Fighting in South China

Early in 1918 three squadrons were formed to participate in the fighting going on in South China. Squadron No 1 with two Caudron G2s under Commander Pao was sent to Yochow in Hunan in February. In April these machines were abandoned and the personnel returned to Nanyüan. Both aircraft were recovered intact, however, during an advance



Avro 504K at Peking with British instructor. A total of 60 of this type was obtained in 1920-21.

Vickers Aircraft

A British intelligence report dated 5 April 1924 listed what had become of the Vickers Contract aircraft:

- Ch'ingho, Peking: 7 erected and 20 stored Vimys, 4 erected and 3 stored VIMs, 3 serviceable and 7 unserviceable Avro 504Ks
- Nanyüan, Peking: 1 Vimy, 13 serviceable and 4 unserviceable Avro 504Ks. Written off: 5 Vimys, 1 VIM (+ 5 not accounted for), (27 Avros not accounted for or written off)
- Paoting, Chihli: 3 Vimys, 23 VIMs, 6 Avros
- Loyang, Honan: 2 Vimys, 1 VIM
- Nanking: 2 Vimys, 2 VIMs (+1 written off)

in May. Squadron No 2 with a pair of Caudron Gs under Commander Yao was put at the disposition of Ts'ao K'un in January. He attached the squadron to Wu P'ei-fu's army corps, but in May it was sent back to Nanyüan.

Squadron No 3 was commanded by Chang Ping and was attached to the 2nd Army at Youhien, Liling, near the Hunan-Kiangsi border, in January 1918. In April Hunan troops captured both aircraft, a Caudron G2 and an American aircraft. Apparently an attempt was made to use the captured aircraft, but it is not known if it was successful or not. The "American" aircraft had been purchased in Japan by Sun Yat-sen and had later been given or sold to the Ministry of War at Peking and sent to Nanyüan. It was probably the Sakamoto No 6 (Martin copy) (See under Canton Government - KMT).

By October 1918 aviation was supervised by Generals Yao (General Inspector) and Wang (Flying Training Inspector) and the airfield at Nanyüan had been enlarged to 1,800 x 800 m. The Flying School under General Tsing Kuo-yung possessed a number of offices, barracks and other buildings, a hospital, four hangars and the workshops. Of the original 12 Caudrons, two Caudron Ds (used as instructional airframes only), four model Gs and two G2s remained, none of them airworthy. In addition there were four Nanyüan-built 90-hp tractor aircraft and four 110 hp pusher aircraft. Further examples of the pusher type were under construction, enough engines for six more being on hand. In addition there was also an 80-hp pusher biplane, which had been built by the workshops, that was armed with a Hotchkiss machine-gun. The engine, a 125 hp Hall Scott, and the damaged fuselage and wings of an American aircraft, probably the Christofferson biplane acquired by Sun Yat-sen from Japan in 1916, were also at Nanyüan.

Flying instructors included Commanders Pao and Yao, both trained at Saint-Cyr in France, and civil pilot Li Juyen (Zee Yee Lee), who was trained by Bristol in Great Britain. The workshops were run by Martineche, Boffa, and P'an Shih-chung. P'an was trained as a mechanic and pilot at the Deperdussin school at Reims in France.

A New Start

In February 1919 Ts'ao Ju-lin, Minster for Communications, organised the Bureau for Planning of Aviation Matters (Ch'ou-pei hang-k'ung shih-i ch'u). On 24 February General Ting Shih-yuan, Head of the Bureau, ordered six twin-engined Handley Page O/7 passenger transports and eight Avro 504 trainers from G W Fradsham of the Pekin Syndicate (agents for Handley Page). The International Arms Embargo that came into force on 5 May 1919 did not affect these aircraft as they were declared to be civil types. They could easily be converted into bombers, of course, and although this was possibly not the original intention, it is exactly what happened later. According to the contract a pilot and two mechanics were to accompany the aircraft. The first Handley Page was shipped on 25 August. It arrived at Nanyüan in November and was flown for the first time on 6 December. The other machines were shipped in August and September.

On 9 December 1919 the Ministry of the Army organised its own Bureau for Aviation Matters (Hang-k'ung shih-wu ch'u), in competition with the Ministry of Communications. General Ting Chin (Mouhan K Tinn/Mo Han K Ting/Ting Chin-jen) was appointed Chief of the new bureau. Zee Yee Lee was still Director of the Aviation School at Nanyüan, which on 31 December 1919 was transferred from the General Staff to the Bureau for Aviation Matters. In October and November 1919 the Pekin Syndicate shipped two RAF SE.5A single-seat fighters to China on SS "Kitano Maru" and SS "Somali". The Governor of Honan had ordered them, but the Peking Government refused to issue an entry permit, seized the aircraft in Shanghai and took them to Peking.

In February 1920 the third Handley Page to be assembled made several flights at Nanyüan with Captain A Mackenzie at the controls. Handley Page representative Lt Col H St Claire Smallwood was present and several sightseeing flights were made. By March three aircraft were stored at Nanyüan and three had been sent to the Mongolian border. On 7 May Mackenzie flew from Peking to Tientsin and back with the British Minister as passenger and about the same time training had started on the first two Avro 504s, which had arrived, probably in April.

Early in February 1920 it was announced that British Colonel F V Holt would go to China as Aeronautical Adviser to the Army Ministry's Aviation Bureau. When he arrived in April he was accompanied by a pilot, Major Patterson. In the meantime the Ministry of Communications had hired Sinclair-Smallwood as adviser and Mackenzie as pilot and a pair of Italian engineers were to be employed to supervise aircraft manufacture at the recently improved workshops at Nanyüan. The Nanyüan flying school still had over 30 old aircraft and 50 students and it was intended to organise an advanced school there, and a primary school at Hsiyüan. Airline services were to be established on the Peking-Kalgan-Kulun, Peking-Paoting-Hankow and Ichang-Wuchang-Nanchang-Shanghai routes.

According to an American report dated 8 March 1920

there were 12 Caudrons, two aircraft "of old Japanese model", and 12 "copies of old Japanese models with American engines" at Nanyüan. Three Handley Pages had been accepted, but were not in use, and two Avros.

The An-Chi War of 1920

When Feng Kuo-chang died in December 1919 he was succeeded by Ts'ao K'un as leader of the Chihli faction. By late 1919 the Anhwei controlled the Peking area, Jehol, Chahar, Suiyüan, Shantung, Shansi, Honan, Fukien, Chekiang and Anhwei itself. In Peking the parliament was under the control of Tuan Ch'i-jui. The Chihli power base was Southern Chihli, Kiangsu, Hupei and Kiangsi, and Ts'ao K'un had his headquarters at Paoting in Chihli.

In July 1920 Ts'ao allied himself with Chang Tso-lin in Manchuria and declared war on Tuan Ch'i-jui (Anhwei). Wu P'ei-fu (Chihli) soon defeated Tuan's army (Anhwei) and this placed the Peking administration in the hands of the victors Ts'ao and Chang. Chang took over most of the arms and equipment left by the Anhwei army.

The Anhwei-Chihli war of 1920 finished Tuan Ch'i-jui as a major warlord, but the Anhwei clique remained in power in Fukien and Chekiang. Chang Tso-lin maintained and consolidated his position in Fengtien and the other two provinces of Manchuria, and Ts'ao K'un and Wu P'ei-fu added Peking and northern Chihli to the original Chihli territory.

Aviation Bureau leaders Ting Shih-yuan and Ting Chin were probably both Anhwei supporters, so the Anhwei controlled all available aircraft and were using them for military purposes. The following were listed in an American report on Nanyüan: 12 old French with 40-80 hp Gnome (Caudrons), two old Japanese, 12 Chinese-made copies of the old Japanese model with American engines, five copies of old French model (Caudron), three Handley Pages, seven Avros, of which four had been accepted, and two SE.5As. The SE 5As had been seized by Peking from the Governor of Honan. Bombs had been bought recently from the Italians for the fighting. Four Caudrons with 110 hp engines (?), allegedly modified in some way by French mechanic Martineche, were reported to have taken part in the fighting on 14-18 July. The last-mentioned aircraft were more likely of the type built locally with American Gyro engines.

It seems, however, that few pilots could, or wanted to fly during the war. A large sum of money was apparently offered to a Swiss mechanic without flying licence, who was asked to fly one of the Handley Pages. He allegedly managed to fly to Peitsang, drop bombs and get back safely[5].

At the end of the war Chang Tso-lin occupied the aerodrome and seized the aircraft found there. The six Handley Pages were divided between him and Ts'ao K'un at Paoting and sent away. In October at least 18 Avros, three Caudrons and 25 engines were sent off to Mukden, although Chang returned four Avros to Nanyüan in November. He also took the two SE.5As.

On 12 August 1919 a large contract between the Chinese Government and Vickers Ltd had been signed. The British firm was to deliver 40 Vimy Commercial transports, 25 Vickers VIM (reconditioned RAF FE.2D) trainers, 20 reconditioned Avro 504K trainers and spares. Two British pilots and eight mechanics were to be sent out to assemble and test fly the aircraft. On 1 October 1919 an agreement was signed with Vickers for a loan of £1,803,000, with which 100 Vickers Vimy Commercial transports were to be purchased and the contract was changed accordingly. Ten of the Vimys were to be built in 1919 and 90 in 1920.

It was soon realised that there was little need in China for this enormous quantity of passenger aircraft, and a modification of the contract was proposed. Only 40 Vimys were to be delivered and instead Avro 504K and Vickers VIM trainers were added, as in the first contract. On 13 June 1920 the final numbers were agreed upon: 40 Vimys, 60 Avros, including 20 already despatched, 35 VIMs and 33 spare engines (10 Gnome Monosaupape and 23 Rolls-Royce Eagle VIII). A second loan was taken in August 1920.

The Avros were shipped from England between 10 March and 21 May 1920 and the first two Vimys left on board the SS "Glensamda" on 17 June. The two British pilots and eight mechanics sent out to assemble and test fly the aircraft arrived in China in the same month. Up to 25 September a total of 20 Avros, 10 Vimys and 10 Monosaupape engines had arrived in China. Another four Vimys were due at Tientsin on 18 October, and another ten in November-December. Most of the Avros taken by Chang Tso-lin were from the Vickers contract, but it seems that no Vimys were removed from Peking in 1920.

In March 1920 the Japanese negotiated a loan to China of $15,000,000 to be used partially for the purchase of Italian aircraft through the Japanese Okura Company. This agreement was never put into effect, however.

As a consequence of the An-Chi war the two aviation authorities in Peking were amalgamated under Ting Chin in August 1920. Ting Shih-yuan (Ministry of Communications) for some reason "became a fugitive from justice" and left for the Japanese legation. The new Bureau for Aviation Matters (or Aeronautical Department) was reorganised by Presidential Mandate on 9 February 1921 into the Aviation Bureau/Aeronautical Department (Hang-k'ung shu) under Ting Chin and was made independent and placed directly under the Cabinet. The Aeronautical Department headquarters was in Peking, near the General Staff building and there were bureaux for civil aviation, military aviation, technical matters, etc. Chin's chief of Staff was Commander C F Ch'u.

In July 1921 General P'an Chü-ying succeeded Ting, who was ousted for political reasons, as Director (Shu Chang) of the Aviation Bureau. Director-General (Tu Pan) of the Air Service was the Premier. P'an Chü-ying was former Chief of Staff to Ts'ao K'un. Colonel Ching was combined Head of the civil and military aviation bureaux, and Colonel Li was head of the technical bureau.

[5] The British Legation in Peking reported that one Handley Page had been used for bombing only once, and that it had been flown by an intoxicated Swiss mechanic, who was immediately dismissed afterwards.

Vickers Vimy named "Hsüan Hou" with Peking Government national insignia and rudder markings.

A new aviation school was being established at Ch'ingho, 8 miles northwest of Peking on the Peking-Kalgan railway, to take the place of the Nanyüan school. By February 1921 eight hangars had already been built there. Three foreign instructors were working at Nanyüan: Patterson, Lewis (both from Vickers) and the American George W Northridge[6]. Northridege (ex-RAF), who had been employed in January, initially for six months, had earlier been in Canton. Six Avro 505Ks were in use and there were about 80 pupils since the beginning of the year. Three new British flying instructors, W E F Jones[7], E R McMullin and A C Campbell-Orde, were hired and arrived in April 1921. An American, Charles H Dolan (ex-USAAS), and French pilot Masse were also engaged.

On 25 February 1921 one of the Ansaldo SVA 9 aircraft brought to China during the Italian Air Force flight to Japan in 1920 was presented to China and placed in the Historical Museum at Wu Men Lao. In London the remaining aircraft of the Vickers contract, 16 Vimys, 40 Avro 504Ks and 35 VIMs, were being handed over to Chinese representatives in January-February. The last machine, a Vimy, was despatched on SS "Benarty" in August. The majority of these aircraft were put in store at Ch'ingho.

On 2 April Peking-Nanyüan air touring started with a Vimy flown by McMullin, Campbell-Orde and Jones. On 13 April a storm blew down the canvas hangar and the aircraft in use was crushed. However, on 27 June Jones flew a Vimy named "Ta P'eng" from Peking to Tsinan and the "Cheng Ku" was flown by Patterson and Lieutenant Tsao (a Chinese flying instructor). Another Vimy was named "Shu Yen". On 1 July the Aeronautical Department inaugurated an air service between Peking and Tsinan, and to Peitaiho Beach. It was suspended later in the same month because of flooding of the aerodrome at Tsinan and financial trouble due to lack of mail and passengers.

The eight Vickers mechanics, who had arrived in June 1920, were scheduled to leave in December, but one rigger and one engine man had their contract renewed. French mechanic Martineche headed the workshops. Vickers pilot Lewis had returned home, but Patterson was still in Peking and working as instructor on VIMs at Ch'ingho and French pilot Masse remained as well.

There were about ten pre-war Caudron pilots, who had not flown for at least three years, 20 soloists who flew the Avro, about 50 new students, about ten ground officers and 30 mechanics. At Nanyüan there were two double-hangars, one canvass Richards hangar, a shop and a barracks used as a store room. About 15 Avros and three Vimys had been erected. The rest of the new Vickers material was stored at Ch'ingho, where there were three permanent hangars and four matshed hangars. There were 30 Vimys, 35 VIMs and 40 Avros in cases and complete shop equipment. There were also the bombs that had been bought from the Italian Legation by the Anfu in July 1920.

Two Chinese officers had been sent to participate in an aviation course with the US Army Air Service and the four officers sent by the Navy to the Curtiss School in Manila had returned and were now in service with the Aeronautical Department.

The Chih-Feng War of 1922

Chang Tso-lin returned to Peking in the latter part of 1921 to adjust matters to his own satisfaction, but relations between him and Wu P'ei-fu quickly deteriorated. In 1922 Chang Tso-lin was to challenge Chihli in the First Chih-Feng War. The Chihli faction now included Chihli (with Peking), Shansi, Honan, Shantung, Hupei, Anhwei, Kiangsu and Kiangsi. On 22 March Manchurian troops began to enter northern Chihli. The coalition Chang had arranged for the war collapsed immediately, however, and the Japanese support he had counted on did not materialise either. On 28 April Wu moved north to take Peking and on 4 May Chang Tso-lin's troops collapsed and fled. General Li Yuan-hung succeeded Hsu Shih-ch'ang as president in Peking.

Colonel F V Holt saw no prospect in trying to reorganise aviation again after the war and resigned from his post in April 1922. He left for England on 6 July. At that time many of the Vickers contract aircraft had still not been erected and there was a vast supply of spare engines and parts. After the fighting terminated Ts'ao K'un seized six Avro 504Ks, four VIMs and four Vimys and took them to Paoting and some 20 VIMs were later added to the aircraft inventory there. About 65 aircraft remained in Peking. In 1922 the Caudron Company presented a Caudron G 3 trainer to the Government. It had been imported by Captain Roques,

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[6] At the end of November 1919 General Ting Chin had asked the American Military Attaché to recommend three American aviation advisers.

[7] Jones was later in Chinese civil service from May 1923 to February 1928 and was then employed by Arnhold & Co.

French Aeronautical attaché to Peking, and French flying instructor Masse. It had arrived in Peking already in October 1921 and had been used as their private aircraft in the meantime. It was handed over on 26 August 1922[8].

The Nanuyüan school had to close down temporarily, but the school at Ch'ingho was re-started with Jones, Campbell-Orde and Northridge as instructors, Dolan as Senior Pilot and three British mechanics. A call was sent out for Chinese with experience in aviation. Many students answered the call and returned home and the Aeronautical Department sent several other young officers to the USA for advanced training. At Nanyüan the number of cadets was limited to 50, half of whom were in the observer class. In order to improve the school's finances a weekend passenger service with Vimys was operated between Nanyüan and Peking, more or less regularly, during the summer months.

By January 1923 the Aviation Bureau had five assembled Vimys and 40 Avros in service, and four foreign instructors, including Campbell-Orde. In May Brigadier-General H Cheng (former Director of Military Aeronautics) was appointed Director of a planned Peking-Shanghai airline service, with D K Ching as Technical Expert. General Chao Yü-k'o was appointed Director of the Aeronautical Bureau on 10 November 1923. Jen Ting-cheng and Chang Shao-cheng headed the military and civil aviation sections, respectively.

At Chi'ingho the workshop supplied by Vickers had now been completed. By November 1923 one French and two British mechanics were still employed, but Northridge was now the only foreign flying instructor. There were just eight or ten students flying the VIM and Vimy, but some night flying was practised. The storehouses contained the greater part of the Vickers aircraft, most of them still crated. Nanyüan aerodrome was practically closed and there was no flying at that place.

By March 1924 twenty Vimy pilots had been trained at Ch'ingho and there were a total of 40 pupils at Ch'ingho and Nanyüan. Primary training on Avros was done by Chinese instructors at Nanyüan, and advanced training on the VIMs and Vimys took place at Ch'ingho. There were two Vickers mechanics, Williams and Tollard, and about 150 Chinese mechanics, but all were not on active duty. The aircraft inventory consisted of 27 Avro 504Ks, 28 Vimys, 7 VIMs and a Nieuport fighter that had been sent from Paoting for testing.

The Peking Government ordered 12 Breguets, including four Breguet 19s, from France in the summer of 1924 and about September a Count "de Boyne" was hired as pilot[9].

The Second Chi-Feng War of 1924

In the autumn of 1923 a campaign was started by the supporters of Ts'ao K'un, aiming at the removal of president Li Yuan-hung and Ts'ao's take-over of that post. In October Ts'ao K'un achieved this by dubious means and was made president. Feng Yü-hsiang's betrayal of the Chihli clique in the Second Chih-Feng War in 1924 eliminated Ts'ao K'un, however, and reduced Wu P'ei-fu to the status of warlord of Hupei and Hunan.

Wu P'ei-fu mobilised a large army in 1924 with the intention to finally defeat Chang Tso-lin. The war started on 16 September and on the following day Wu P'ei-fu reached Peking. His ally Feng Yü-hsiang was bribed by Chang, however, and marched back to Peking instead of participating in the attack on Chang's army. On 24 October president Ts'ao K'un was imprisoned and persuaded to dismiss Wu P'ei-fu and Chang Tso-lin now emerged as the most powerful warlord.

Feng immediately reorganised his forces as the 1st Kuominchün (KMC, National Army) and remained for some time in Peking. In December 1924 a new Government under Tuan Ch'i-jui was recognised. Feng was appointed Military Governor over Jehol, Chahar and Suiyüan and in early 1925 set up his new headquarters at Kalgan, leaving Chang in control of the "national" government in Peking.

More fighting followed and on 9 April 1926 Tuan Ch'i-jui was arrested and Ts'ao K'un was released. On 16 April KMC general Lu Chung-lin evacuated Peking. Chang Tso-lin was then again in control of Peking and organised a government under his personal control.

After the Civil War in October 1924 the Aviation Bureau with about 20 Vimy and 37 other machines in storage at Ch'ingho fell into the hands of Feng Yü-hsiang (actually the 3rd KMC under General Sun Yueh). The last of the Vickers Vimys, some nine or ten aircraft, were taken over and transported to Kalgan when Feng Yü-hsiang evacuated Peking in 1925. This was the end of the Air Force of the Chinese Republic at Peking.

Naval Aviation

The Chinese Navy was dominated by a clique of well-educated officers from Fukien, who were nationalists and supporters of the 1912 constitution. Admiral Ch'eng Pi-kuang was appointed Minister of the Navy by president Li Yuan-hung. The Navy's motley collection of old cruisers and gunboats could not be used in the inland fighting and was to play only a minor role in the Chinese civil wars. During 1921-22 the Navy Headquarters at Shanghai supported Wu P'ei-fu. The 1st Squadron of the Navy was at Canton and the 2nd at Shangahi.

The Chinese Navy Board established a naval flying school in 1918 near Foochow Navy Yard and several aircraft with American engines were built and used for instructional purposes. The activities of the school were frequently interrupted because of financial difficulties and lack of supplies, however. In 1920 Lieutenant Commander Wang Hsiao-feng and four naval cadets were sent out by the Navy Board to the Curtiss School in Manila for training. They arrived there on 24 June and later returned home as qualified pilots.

In 1920 Curtiss representative Sevenot started negotiations with the Ministry of the Navy for the delivery

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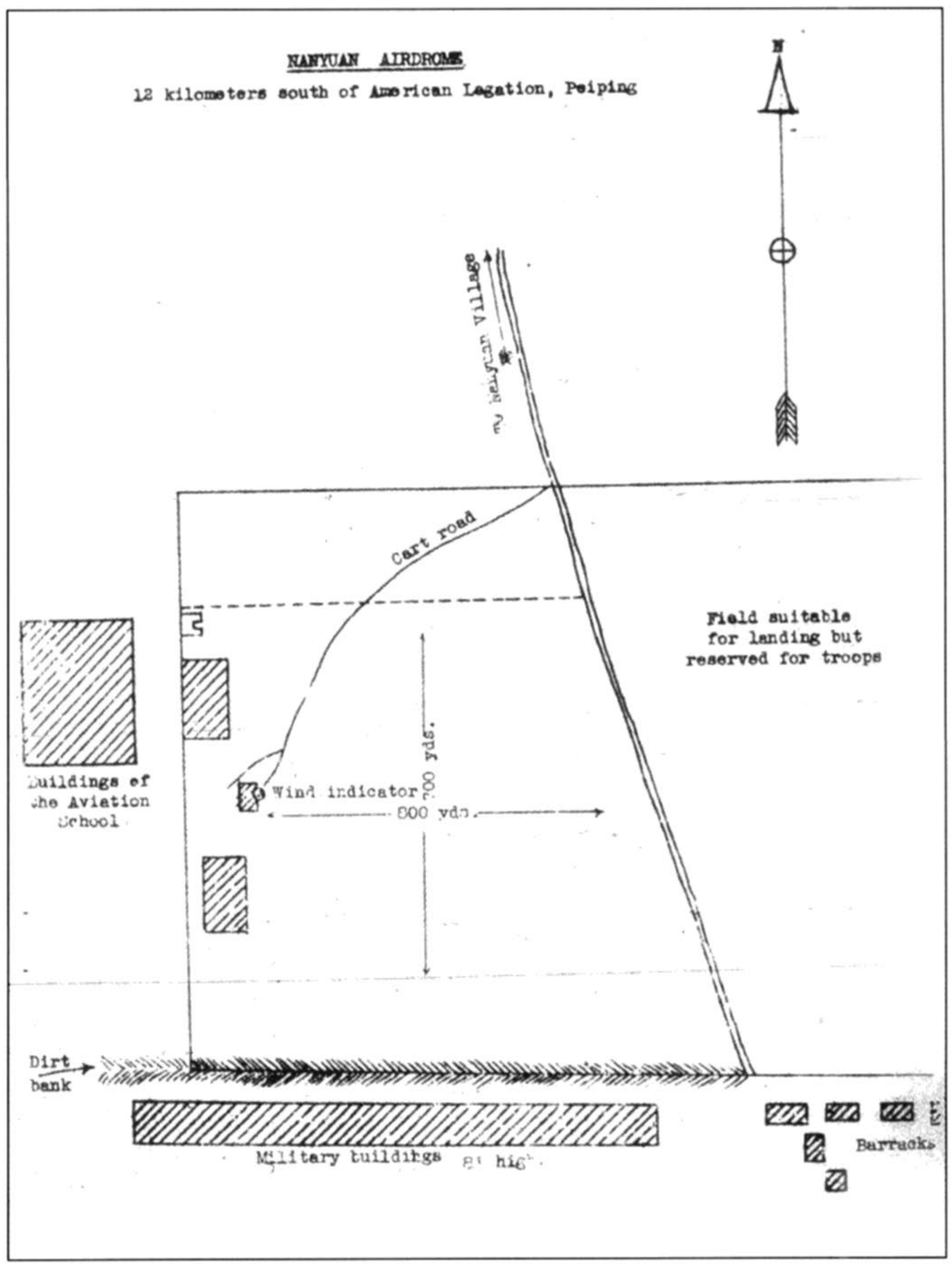
[8] In April 1922 an "indigenous design" was displayed at the Tientsin Industrial Exposition. It was said to be based on the Caudron, but was probably identical to the aircraft later presented.

[9] See Count de Boigne under Shantung!

of a number of aircraft. A draft contract between the Republic of China Government and the Curtiss Aeroplane and Motor Corporation was drawn up in June and included a total of 105 aircraft: 10 C-F-1-6 flying-boats, 20 C-H-S flying-baots, 50 C-S-G flying-boats, 10 C-H-A seaplanes, 15 C-N-S seaplanes and 105 spare engines (40 400 hp and 65 150 hp)[10].

The contract was, however, "taken over" by the British firm Handley Page, just before it was due to be signed and a new agreement was made on 9 December 1920. Handley Page was to deliver 30 Felixtowe F.3 flying boats, 50 Norman-Thompson NT.2B flying boats, 25 Handley Page S seaplanes and 105 engines (55 Rolls-Royce Eagle VIII and 50 Wolseley Viper). Delivery was to be made in England in 3-9 months and the aircraft were intended for "commercial aviation service along coasts and rivers of China".

The British authorities hesitated to place the agreement on record, however. They of course suspected that the Ministry of Finance, who had signed the contract, was a cover for the Ministry of the Marine. It also transpired that the Aviation Department in Peking knew nothing about the affair. On 5 January 1921 Handley Page, who had acted for the Aircraft Disposal Company, finally had to return the contract to the Chinese Government and no aircraft were ever delivered.



Map of the aerodrome at Nanyüan.

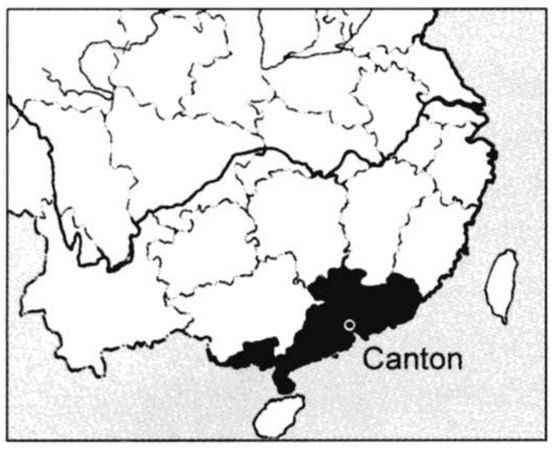
[10] The designations in this contract are not typical Curtiss designations, but could be interpreted as Curtiss H-16, Curtiss HS, etc.

Aircraft used by the Peking Government

Type	Qty	Year	
Etrich Taube	2	1912	
Farman biplane	6		Not delivered 1912 (Order not confirmed)
Caudron D	3	1913	
Caudron F	1	1913	
Caudron G	4	1913	
Caudron G 2	4	1913	
Caudron (G2)	4		Order cancelled 1913
Japanese type	1 (4?)	1913	
Nanyüan monoplane	1	1913	Locally built, designed by Obre. 50 hp Gnome
Nanyüan tractor	4	1917	Built locally. 90 hp Gyro
Nanyüan pusher	10	1917	Built locally. 110 hp Gyro. It is not known if all were completed.
Christofferson biplane	1	1917?	Ex-Canton
Sakamoto No.6 (Martin)(?)	1	1917?	Ex-Canton
Nanyüan pusher	1	1918?	80 hp Gnome
Handley Page HP O/7	6	1919	Captured by Manchuria and Paoting.
Felixtowe F.3	30		Navy. Not delivered 1920
Norman Thompson NT.2B	50		Navy. Not delivered 1920
Handley Page S	25		Navy. Not delivered 1920
RAF SE.5A	2	1920	Ordered by Honan. Captured by Manchuria.
Avro 504K	68	1920	Captured by Manchuria, Paoting and the KMC
Vickers Vimy Commercial	40	1920	Captured by Paoting, Manchuria and the KMC
Vickers VIM	35	1921	Captured by Paoting, (Manchuria) and the KMC
SVA 9	1	1921	Presented to museum
Caudron G 3	1	1922	
Breguet 14	8		Not delivered in 1924
Breguet 19	4		Not delivered in 1924

Provincial Air Forces

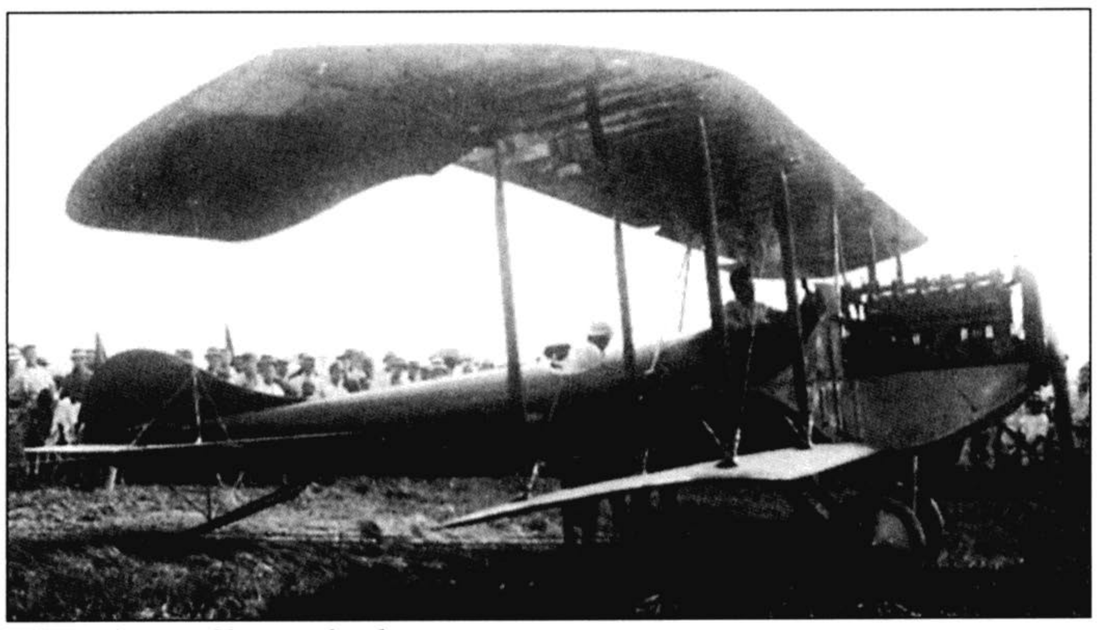
Canton Government (Kuomintang)



Sun Yat-sen was elected temporary President of the Chinese Republic in Shanghai on 29 December 1911. He resigned in February 1912 and was succeeded by Yuan Shih-kai and late in 1912 Sun headed for Japan. In 1917 he went to Canton, the capitol of Kwangtung Province, and on 3 September he proclaimed a military government there with himself as generalissimo, or grand marshal (ta-yuan-shuai). Sun left Canton for Shanghai in July 1918 and in August he resigned from the Canton government, which had by then been reorganised as a military junta.

As we know, Sun was destined to become a leading figure in Canton, but for the time being the most powerful person was Ch'en Chiung-ming, Governor of Kwangtung and Commander-in-Chief of the Kwangtung Army. He was ordered to invade Fukien in January 1918 and first went to Swatow and then moved to Changchow in Fukien. He took that city in August but settled down there as a warlord and was to remain in that position for two years. Meanwhile Kwangsi warlord Lu Jung-t'ing established himself as the leading figure of the Canton military government and Mo Ying-hsin was appointed Governor.

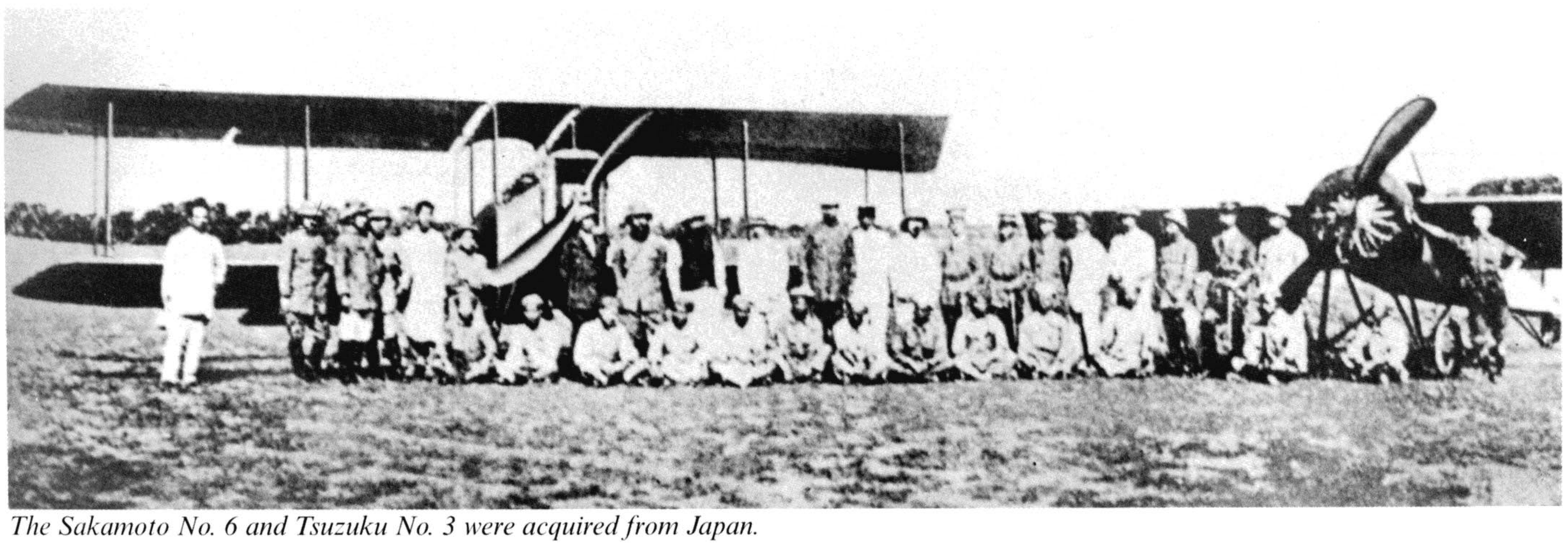
After the Second Revolution in July 1913 Sun Yat-sen asked Chinese-American Lin Sen, or Yang Sen-yi (Young Sen-yat/Yang Hsien-i/Yang Shien-yi), for help to train aviators for an air force to be used against Yuan Shih-kai. In 1915-16 a group of Chinese students was sent to the USA to get flying training and to purchase aircraft. Yang was later to be appointed Director of Aviation at Canton.



The Christofferson biplane.

In 1916 Sun acquired three aircraft for the North-Eastern Revolutionary Army from Japan. Early in 1915 the Revolutionary Army had placed an order with aircraft designer Tetsusaburo Tsuzuku and a monoplane resembling the Nieuport IVG, the Tsuzuku No.3, was completed in April 1915. Yonezo Hoshino assisted Tsuzuku with the delivery of the aircraft to Shantung and stayed to serve as an instructor pilot. The aircraft was handed over to Yun Peng-jao and used by an aviation school at Weihsien.

In September 1916 another Japanese, Juichi Sakamoto, took an aircraft called the Sakamoto No.6, a two-seat biplane, built by Nippon Hikoki Seisakusho, to Shantung. He was engaged by Sun Yat-sen to work at the aviation school. Assisted by Ryokan Tachibana he began to train Chinese pilots. Sakamoto returned to Japan in the spring of 1918. An American Christofferson biplane with 125 hp Hall-Scott engine was purchased as well. It was assembled and test-flown by Yukiteru Ozaki in Japan and then delivered to China in August 1916 with the pilot Wen Syun.



The Sakamoto No. 6 and Tsuzuku No. 3 were acquired from Japan.

These aircraft were used in the campaigns against Yuan Shih-kai. The Christofferson biplane was completely destroyed in a crash after only two short flights and it seems that the engine and the wrecked airframe was at Nanyüan by October 1918.

Aviation in Canton

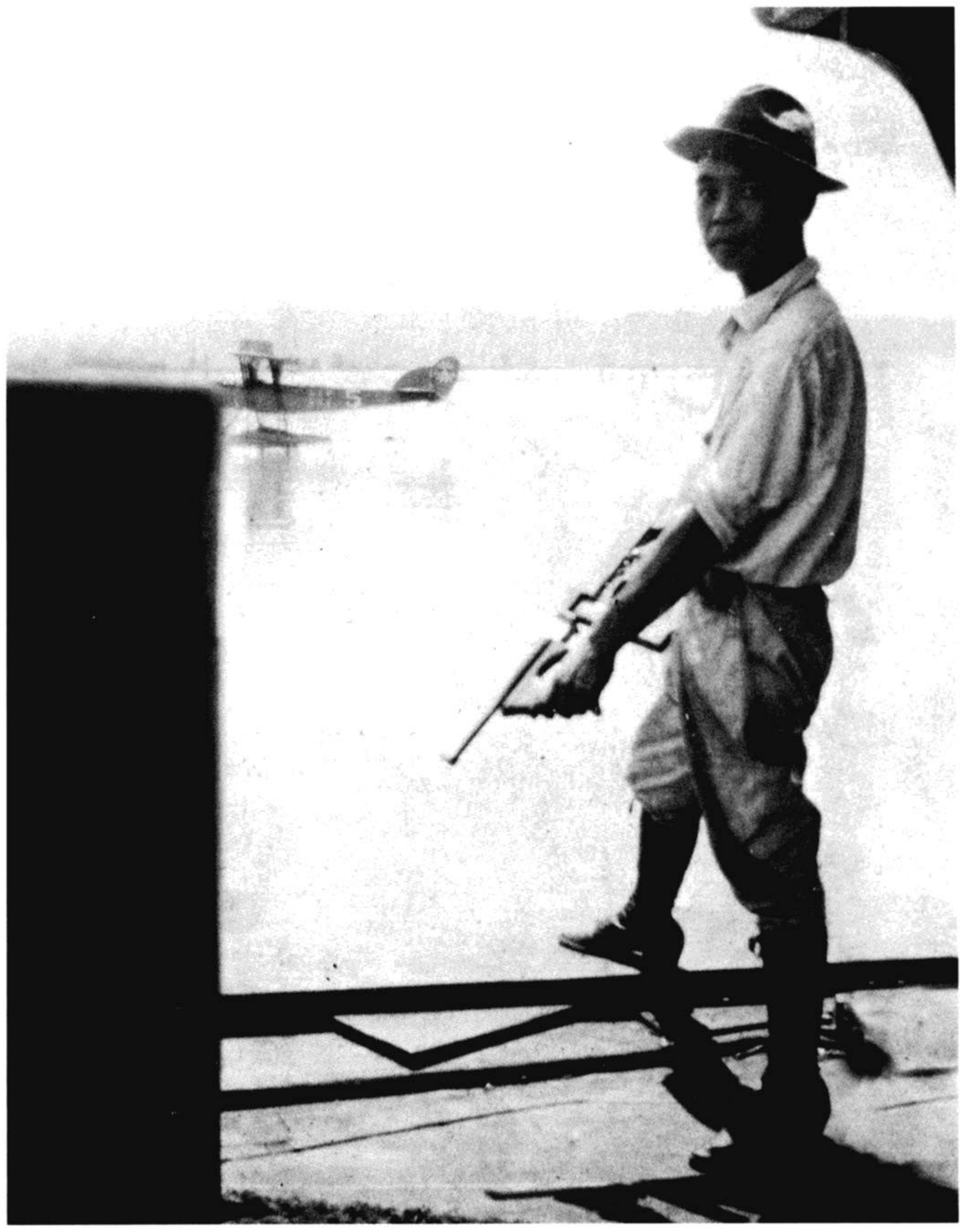
As already mentioned Fung Yu had flown a home-built early type Curtiss Pusher in Canton in 1912, but had crashed and was killed. In 1914 Lym Fuk-Yen (Art Lym)[1] brought another Curtiss Pusher from the USA, but the aircraft was interned in Hong Kong when the First World War broke out. It was released in the latter part of 1915 and was sent via Manila to Swatow, where Lym flew it.

That date seems to be in error, because in November 1916 American nespapers reported that an aircraft of American manufacture, that had been purchased by the Canton Government for army use, had arrived at Swatow. A Chinese pilot trained in the USA had been engaged to operate it.

The 1917 budget of the Kwangtung Province carried an item of $ 217 000 to be expended for aeronautics. A Department of Aeronautics[2] had been established in Canton by the provincial army in 1915 and in October that year Tom Gunn (T'an Ken-jen) came to Canton to talk about starting flying training with General Lung Chi-kwang, who was Governor of the Kwangtung Province at that time. When he arrived in China in June 1915 Chinese-American Tom Gunn, a graduate of the Eaton Aviation School, Los Angeles, had been received like a hero. He was engaged as Director of a Canton Government Flying School, but it was soon evident that the government was not able to meet the costs for the school and it never actually opened. He managed with the aid of the American Consul to have his own Curtiss Pusher shipped through to Canton, but crashed during a flying display on 8 November 1916 at Taishatau Island, narrowly escaping with his life.

By September 1917 the Department of Aeronautics was reported to own a pair of Curtiss aircraft[3] and a hangar. The offices and repair shops had a staff of 28 men, of which three were qualified pilots. Tom Gunn, appointed Director of the department, had been authorised to go to the United States to purchase additional material, equipment for an assembly plant and a new repair shop and planned to leave for the USA early in October.

On 3 August 1918 two floatplanes, probably those mentioned above, arrived at Pakhoi after previous test flights in Canton. The small air unit was commanded by Tom Gunn and had been put at the disposition of General Chang Hong-ying by the Canton authorities for operations against Hainan.



Guard with Curtiss N-9C floatplane s/n 7 in the background.

After the end of the First World War Sun Yat-sen decided to have more pilots trained abroad. At Saskatoon, Canada, the "Keng Wah Aviation School" was organised by Stanley Bing Mah and opened in May 1919. A Canadian flying instructor was engaged (in turn Fraser, Lobb, McNeill and Groome), and there were six pupils at a time at the school until 1922. A single Curtiss JN-4 Cannuck was purchased and used as a trainer. Lim On was the first student and he purchased his own JN-4 Cannuck in March 1920. He crashed the school plane in May 1920, however, but left for Hong Kong after he had recovered. A new JN-4 (C-1303/C-CABQ) was acquired for the school.

About January 1919 the Whampoa Military Academy in Canton was selected for the establishment of a new aviation school and Tom Gunn, Art Lym and Jung Wai-lung drew up the plans. Owing to the large number of waterways around Canton, seaplanes, which could easily make a landing almost anywhere, were preferred and on 10 January Chang Huei-ch'ang ("Jung Wai-chau") made an exhibition with a new Curtiss hydroplane (100 hp engine). Later in the year Tom Gunn arrived from San Francisco to supervise the delivery of "four sea and eight land Curtiss trainers" ordered about a year earlier.

An Aviation Bureau and a repair shop were established under a Colonel Mei at Taishatau aerodrome. This aerodrome was on an island about 2 miles down-river from the Canton Custom House, and was connected with the mainland by a bamboo footbridge only.

In June 1919 Ch'en Chiung-ming established another air

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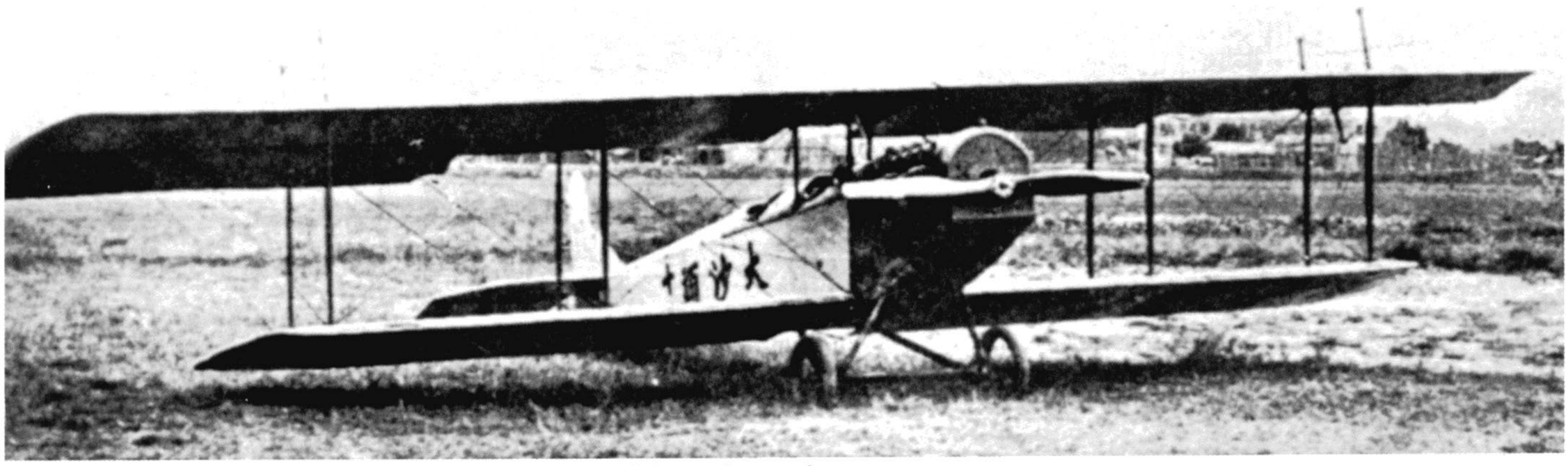
[1] Lym was born in San Francisco in 1891 and he got his pilot's licence in 1913.

[2] Also called the Kwangtung Aeronautical Administration

[3] An American intelligence report dated 19.9.1917 says "two flying machines — an aero-marine motor and a Curtiss aeroplane". A French report dated 31.10.1918 refers to the aircraft as "two new hydroplanes of American make sold by Japan".



Curtiss JN Jenny "Taishatau 10". Taishatau was one of Canton's aerodromes.

unit in Changchow and engaged Chen Ying-ch'uan to head it. He had trained to fly in the USA, as had Li Kuang-hui and Yeh Shao-yi, who were engaged as pilots. Yeh died in a crash in the following month, however. Chang Huei-ch'ang was appointed Commander-in-chief. In February 1920 Chen Ching-yun (probably Chen Ying-ch'uan) placed an order on the behalf of Ch'en Chiung-ming for seven hydroplanes to be delivered from the USA and in April Sun Yat-sen ordered three Curtiss Jennies from San Francisco.

A "Chinese-American Aviation Company" purchased two Curtiss HS-2L flying boats from the USA in the summer of 1920. They were consigned to a person called Jow Sing and shipped, first to Shanghai and then to Hong Kong, where they were detained. In January 1921 Ch'en Chiung-ming tried in vain to get them out of customs and wrote that the Canton Government wanted to buy them for the aviation school. On 15 September Jow Sing applied for a permit to ship them to Manila. The British authorities approved of this and the flying boats were shipped there, but as related later they were in Canton before November 1921. Bonner, a representative of the Northwest Trading Company and the A O Anderson Company applied in September 1920 for a permit to import four "navy type aircraft for civil use in China under American corporation with some Chinese interest". Apparently nothing came out of this attempt.

On 10 September 1920 a pair of two-seat Curtiss biplanes with 90 hp engines arrived at Swatow. They had been shipped from Shanghai to Swatow on SS "Tung Sheng". According to a Japanese report the aircraft were a six-seat Curtiss HS-1L flying boat and a two-seat Aeromarine floatplane. Two HS-1Ls arrived in Shanghai with SS "Kuang Sheng" on 7 October and went to Hong Kong two days later and another four "large-size 15-seat hydroplanes" were still on their way at that time. The two aircraft that arrived on 7 October had probably been consigned to Swatow as well, but a landing permit had not been granted there.

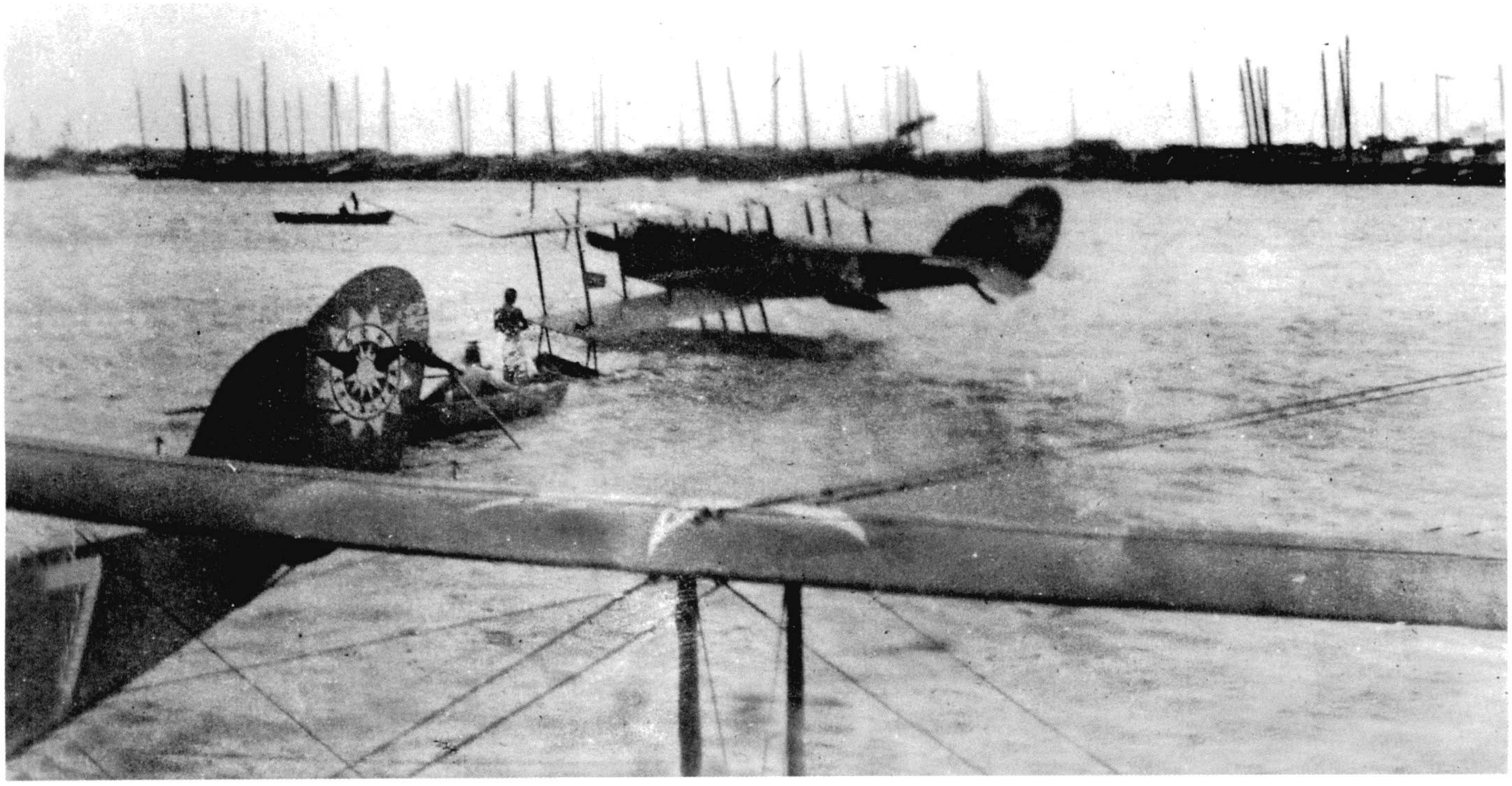
Encouraged by the Governor of Fukien, who wanted to get rid of him, Ch'en Chiung-ming decided in August 1920 to leave Changchow and return to Kwangtung. By the end of October the military government in Canton was dissolved and its army was forced by Ch'en Chiung-ming's troops to evacuate. Warlord Lu Ying-t'ing left for Kwangsi and Ch'en took over as military leader in Canton and soon initiated a campaign against Kwangsi. Fighting started in October 1920 and this war continued until Ch'en took Wuchow on 21 June 1921. Sun Yat-sen had by that time returned to Canton and had assumed the post of "Provisional President of China" on 5 May 1921.

Meanwhile Mo Ying-hsin, the governor of Canton, and Ma Chi, head of the Canton Arsenal, had made a contract with Tan Li-ting and Tom Gunn for a number of aircraft to be imported from the USA. The order also included machinery and materials for the arsenal. SS "Woudrichem" left New York on 12 August 1920 with 52 packages of "seaplanes" consigned to Tom Gunn and the machinery for the arsenal. The packages were reported to have contained five seaplanes[4]. The ship arrived only on 23 November, just after the transfer of power in Canton. The Pacific Development Company, Hong Kong, took over the cargo on the high sea, as Tan and Gunn "were unable to meet their liabilities". Pacific Development was originally registered as Paula Davies & Co, later changed to Davies & Co. Mo and Ma had now lost their positions, but the whole consignment was instead taken over by Ch'en Chiung-ming on 28 November.

American pilot George W Northridge, who was later engaged by the Peking Government, acted as purchasing agent for Tom Gunn and had acquired the aircraft from the US Navy Department. After assembly at Canton, Northridge flew them and took part in active military operations as well. He soon left for Peking, however, and was later engaged by the Manchurian Air Force.

In November 1920 Cantonese troops lost a seaplane, which was captured in damaged condition by the Kwangsi forces. Ch'en Chiung-ming had engaged three American aviators, who had earlier been employed by Ricou in Macao (See under Civil Aviation: Aviation in Hong Kong and Macao). One drowned when his aircraft was brought down, however, and after this unpleasant experience the other two

[4] A British intelligence report dated 29 March 1923 states that the five "seaplanes" imported in 1920 by the Paula Davies Co, Hong Kong, were in fact Curtiss JN-4s. It is quite possible, however, that they were Aeromarine 39Bs, a type which was flown with both floats and wheels at Canton.



Curtiss N-9C floatplanes No 7 and 4.

left and returned to the USA at the end of November. The Canton Government bought two large Curtiss H-16 flying boats (called "Curtiss 12" in the British intelligence report) with machine gun fittings and two small hydroplanes from Ricou. These aircraft had arrived in Canton by March 1921. In addition two "small machines" had been acquired during the recent struggle between Kwangtung and Kwangsi.

Huang Kuang-jui (Wong Kwong-yue, or Freddy Wong), who was to become Head of the Canton Air Force in 1929, came to China in 1921 after having learnt to fly at Redwood City in California. He became flying instructor in Canton after further training in the Soviet Union in 1925.

An RAF officer visiting Canton in April 1921 reported that there were six new Aeromarine 39B floatplanes, two H-16 ("H-12")[5] flying boats, one HS-2L flying boat and a Curtiss JN-4 Jenny trainer. The total number of aircraft on the inventory was stated to be 13 flying boats and seaplanes and three landplanes. In addition Hong Kong authorities

[5] It is evident from other sources that the H-16 and not the H-12 was used in Canton.

The "Rosamonde" ("Ching-ling") that was built by American Colwell and Wilde. Yang Sen-yi and his staff.

were holding up two large flying boats. The Jenny crashed and was wrecked on 14 April, the Chinese pilot flying it being seriously wounded. There was one American flying instructor and 16 pupils. The Canton Aviation Bureau was reorganised in February 1922.

American Alfred J Croft left Manila for Hong Kong on 14 November 1921 to work as flight instructor in Canton. He travelled with his employers, who had spent more than a month at Manila arranging a permission to unload two American seaplanes in Hong Kong. These aircraft were probably the two Curtiss HS-2Ls that had been detained in Hong Kong since 1920. On 15 September Jow Sing applied for a permit to ship them to Manila. He got the permit, sent them there and then shipped them to Canton early in November.

By December 1921 the following aircraft were at Canton according to an American intelligence report: three Curtiss JN-4 Jennies, one Gallaudet (60 hp engine), one Gallaudet (120 hp engine) and two aircraft with 250 hp engines. It was believed that some of them had been bought from Ricou. The engine types reported seem suspect, but otherwise the "Gallaudets" could well be Gallaudet-built Curtiss HS-2Ls. On 1 December 1921 an American pilot named Roth was employed as flying instructor for six months.

According to the newspapers, it was proposed at the end of 1921 to allow civilian joyrides in Canton Government aircraft and "for this reason" five more aircraft were being purchased in the USA. These arrived in Canton from Manila on 4 January 1922. Other reports say that ten aircraft were delivered and that they arrived on 3 January on "Georgie", a Russian ship under French flag. An American intelligence officer reported on 20 February 1922 that there were two "useless" Curtiss H-16s, two "useless" Aeromarine seaplanes, one Curtiss HS-2L and five new Curtiss JN-4D Jennies at Canton and another two HS-2Ls were in Manila en route for Canton. In May 1922 Peter Paul Devlin, New York, requested a permit to export two Curtiss biplanes from the USA to Canton, but no licence was issued to him.

Sun Yat-sen Leaves Canton

Ch'en soon opposed himself to Sun and was removed as Commander-in-Chief and Governor in April 1922. Sun Yat-sen assembled an expeditionary force at Kweilin, Kwangsi, to go north and on 6 May he started the so-called Northern Expedition with an invasion of Kiangsi. Ch'en took the opportunity and immediately occupied Canton. Sun marched the troops loyal to him back to Canton to fight him, but had to flee the city in June and took refuge on the Chinese Navy gunboat "Yungfeng". The Navy started to bombard Ch'en's troops, but on 14 July he captured the dockyard at Whampoa and on 9 August Sun left Canton for Shanghai.

In August 1922 Alfred Croft returned to the United States when his contract with the Kwangtung Aviation Bureau expired. By now the aircraft inventory consisted of four Curtiss JN-4D Jennies, two unserviceable Aeromarine seaplanes, two Curtiss H-16s, of which one was unserviceable, and two Curtiss HS-2Ls.

The "Keng Wah Aviation School" in Canada closed in 1922 after having trained 17 pilots, five of which had gone to the Canton Air Force. The equipment of the school was taken over by Lee Shuen, one of the members of the local Chinese National League. A new school, the "Commercial Aviation School", was started in May 1922 at Esquimault, Victoria, with a float-equipped JN-4 (G-CACJ). This machine was crashed by Chinese pilot Hip Kwong on 23 February 1923, however, and was written off, and this apparently put an end to the training of Chinese pilots in Canada.

Yang Sen-yi hired Morris Cohen and sent him to Canada to obtain pilots and engineers. Cohen went to San Francisco instead, got in contact with Harry W Abbott in March 1922 and asked him to train Chinese pilots. Abbot agreed and operated an aviation school for this purpose at Courtland, California, where ten Chinese-Americans were taught to fly and repair aircraft. Training started in April 1922 on two Curtiss JN-4Ds, which were marked with the Chinese characters for "Chinese Air Force" under their wings. The course was completed in October 1922 and the whole group sailed with Abbott on the SS "President Cleveland" to Shanghai, with Yang Sen-yi in charge. Yang became a general and was appointed Head of a new Aviation Bureau, which was being established in Shanghai. Abbott was commissioned as a Captain in November 1922 and was to stay in the Canton Air Force until March 1924.

The prototype Friesley Falcon, a 12- passenger twin-engined transport biplane, was sold on 24 May 1922 at an auction in San Francisco to "the Chinese Government" and prepared for shipment to China. By August 1922 six Curtiss JN-4Ds and the Friesley Falcon were allegedly in storage, or in transit to Fuchow. They had been purchased by Great China Airways (See under Chihli heading), which had apparently been revived in Fuchow as a bogus company for Sun Yat-sen's aircraft purchases.

Since the autumn of 1922 Ch'en Chiung-ming had been attacked by Hsu Ch'ung-chih, another Kwangtung general, and the Yünnan army, and in January 1923 he withdrew from Canton and returned to Huichow. He re-established his former base area in eastern Kwangtung and he was to stay there until October 1925. In January 1923 delivery was expected from Manila of five Curtiss JN-4 Jennies, which had been sold by American citizen George Cole to the Canton Government (Ch'en Chiung-ming). Cole served as flying instructor at the Government aerodrome. It is not known what became of these aircraft.

In order to strengthen his prospects of returning to Canton, Sun Yat-sen apparently made an attempt to have Ch'en Chiung-ming's air force put out of action. He ordered General Yang Sen-yi to send out saboteurs and destroy as much equipment as possible. Stephen Lam and two others sneaked ashore at Taishatau on Honam Island in December 1922 and set fire to one of the hangars. An Aeromarine 39B, two Curtiss H-16s, a Curtiss HS-2L, four Curtiss JN-4D Jennies, the entire stock of spares and two tractors used for hand-

Soviet-built R-1 with characters "Shan Chung" painted on its fuselage.

ling the seaplanes were destroyed. All that remained was one HS-2L and two JN-4D fuselages in another hangar and an Aeromarine on the beach.

The details above are from a report made by an American lieutenant in February 1923. A British intelligence report dated 29 March 1923 states that five Curtiss JN-4s were destroyed in the fire at the aerodrome which occurred when Ch'en Chiung-ming's troops retreated from Canton in January 1923. At the same time one of the Curtiss HS flying boats was also destroyed. Only one HS-2L and one H-16 remained. Whatever the truth was, one HS-2L had survived and was employed for parachute exhibitions in March.

In January 1923 General Yang directed Abbott and the men trained in California to go to the gun factory in Fuchow to assemble the six Curtiss Jennies and the Friesley Falcon stored there, to test fly them and later take them to Canton. The Friesley Falcon was used to pre-position fuel and oil supplies in various coastal cities for the bombing of Canton by the six Jennies[6]. As already related, Ch'en Chiung-ming left Canton in January, however, and the Jennies were instead transported to Honam Island in March-April 1923.

A New Air Force

In April-May 1923 the group of US-trained aviators moved with Sun Yat-sen's headquarters to Canton and Sun Yat-sen resumed his title of grand marshal. Yang Sen-yi became the head of the new Aviation Bureau (Hang K'ung Ch'u) and some of the damaged aircraft were recovered and repaired.

Yang had secured the services of Guy H Colwell, an aircraft engineer who had previously worked with Bristol in England, and aircraft builder Arthur R Wild ("Art Smith"), while visiting the USA in 1922. They arrived in Shanghai in April 1923, went to Canton and were immediately directed to design a reconnaissance and light bombing aircraft. Harry Abbot's son Wayne A Abbott was also employed, but he returned to the USA in July. All four maintained that they belonged to the Golden River Trading Company, San Francisco, when they applied for registration in Canton, and that they were engaged in building aircraft for Sun Yat-sen.

Yang instructed Lo Wei-pu to establish a small aircraft factory at Taishatau aerodrome. Old spare parts were used where possible and a 100 hp Curtiss OXX-6 engine, one of a number recently imported, was fitted to the aircraft, which was completed in June 1923. It was marked with s/n 1 and the Chinese characters for "Hang K'ung Ch'u" (Aviation Bureau) and was allegedly first flown by Wang Kongray (Huang Kuan-jui)[7].

On 9 August Sun Yat-sen christened the new aircraft "Rosamonde" (Ching-ling) after his wife, Rosamonde being her Christian name. Another three aircraft were to be built, but the "Rosamonde" and the parts for the new aircraft were destroyed by a fire at the workshops on 20 September. Yang Sen-yi was killed in the explosion that started the fire, which had occurred when an aircraft was being loaded with bombs. The date 20 September was later designated by the National Government as the "Aviation Day"[8]. Colwell died of typhoid fever in Hong Kong in 1924 and Wild returned to the USA in the same year. In March 1924 Abbott resigned his commission and moved to Hong Kong.

Early in June 1923 three steamships, "West Ivan", "Hamburg Maru" and "President Pierce", arrived in Hong Kong with five Aeromarine seaplanes and six two-seat "DH-9" biplanes. The aircraft had formerly been the property of the Friesley Aircraft Corporation and had been bought at an auction in the USA. They were consigned to Lu Sap, Macao, but were detained by customs. Lu Sap produced an import licence from the Macao Government so they were then released and taken to Canton. Although it had previously been stated that the aircraft were intended for a commercial airline in Macao, Eugene Ch'en (Chen Yu-jen)[9]

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[6] According to one source there were only four Curtiss Jennies. Another source states that ten were acquired in the USA and that six of them were destroyded by fire where they were temporarily stored at a San Francisco suburb airport.

[7] Abbott apparently maintained that he made the first flight.

[8] According to another version of this incident it happened on 3 October 1923.

[9] Eugene Ch'en was Sun Yat-sen's Foreign Secretary. He was head of the Aviation Bureau from 30 September 1923 to 1924, when Chang Ching-yü was appointed to this post.

told customs that they had been acquired by the Canton Government for "police purposes". Four "small machines" were immediately erected, tested and sent "to the front".

It is evident from photos that at least three Curtiss N-9C two-seat floatplanes (a float-equipped Curtiss JN Jenny) were in service by mid-1923. The Curtiss Jenny, Curtiss N-9C and Aeromarine 39B were somewhat similar in appearance and some of the intelligence officers reporting from Canton might well have been mistaken about the exact type of aircraft seen. The N-9C and the Aeromarine had the same single-float arrangement, and the N-9C was also used with a wheel undercarriage, like the Jenny. It has not been possible to find out when the N-9Cs were delivered, but it was probably not before 1923. According to British intelligence a few, possibly five, Curtiss and "DH-9" aircraft were used in the operations in Kwangtung in 1923/24 and in February 1925[10].

Aircraft deliveries to Canton in the early 1920s are confusing and extremely difficult to track. In May 1923 a Chinese agent in Manila was trying to purchase the aircraft that had formerly been used by the disbanded Philippine Air Service. In November the same year American pilot Charles Kenner decided to serve with Sun Yat-sen at Canton. He purchased a Curtiss Oriole from the Curtiss School in Manila and attempted to fly it to Hong Kong, but crashed when trying to land near the beach.

SS "Elkton" arrived in Shanghai from the USA on 22 December 1923 with five aircraft on board, which were consigned to Canton but had not been declared and were detained by customs. Two of them (consigned to "Chen, Canton") were transhipped late in January 1924 to Kobe and later probably arrived at their intended destination. Early in 1924 the Canton Air Force consisted of four aircraft and two hydroplanes, and it was commanded by Eugene Ch'en[11].

In 1924 four German pilots, Ritter von Greim, Richard Walter, Robert Heibert and H Schnäbele, were engaged by the China International Corporation on behalf of the Canton Government to reorganise the air force and to work as flying instructors. They arrived on board the SS "Trier" in September that year. Schnäbele returned to Germany at the end of 1924, however, and the others soon found that they could achieve little with the resources available at Canton.

Soviet Advisers and Aircraft

Wu P'ei-fu had stationed a considerable number of troops in southern Kiangsi under the command of General Fang Peng-jen. Throughout 1924 he made several unsuccessful attempts to enter Canton and in July Generals Teng and Ling fought the Canton Army in southern Kwangtung. In September Sun Yat-sen started the so-called Punitive Expedition, which consisted of the Hunan Army, the Kiangsi Army, the Yünnan Army and the Honan Army, and General T'an Yen-kai was made Commander-in-Chief of Sun's forces. Ch'en Chiung-ming headed the army opposing Sun and had established his headquarters at Swatow.

Sun Yat-sen had now turned to the Soviet Union for military and political help and a first group of Soviet military advisers had arrived in Canton in the autumn of 1923. V K Blyukher ("Galin") was appointed Chief Military Adviser to Canton in 1924 and was to keep this post until 11 August 1927. An aeronautical adviser, D Uger ("Remi"), was sent to Canton in June 1924 and in fact his arrival coincided with the arrival of the German instructors. An operational squadron consisting of two Curtiss Jennies and a Curtiss hydroplane was now set up and sent to the front. The aircraft were used as bombers, but the bombs were found to be of unsatisfactory make. Another pair of machines "of the same type" was added after they had been repaired and the unit took part in all campaigns in 1924-25.

The Aviation Bureau was reorganised into an Aviation Department (Hang-k'ung shu) in 1924, which was headed by General Chang Ching-yü. In December 1924 a Kwangtung Military Flying School was established at Tungshan. Ten students were chosen from the first class of the Whampoa Military Academy and five other cadets were ordered to the USSR for training. The aircraft inventory of the school consisted of four Curtiss Jenny trainers. Although von Greim made an offer for Junkers T 26 trainers no new aircraft were acquired in 1924.

After having strengthened his power Ch'en Chiung-ming attacked Canton once again in February 1925, but was soon forced to withdraw. Swatow fell to the Cantonese troops on 7 March and Ch'en fled on a warship to Hong Kong.

About February 1925 W O Koehler, a representative of the German firm Goeke & Company in Canton, contacted Robertson Aircraft. The American company agreed to sell five aircraft and five seaplanes for a flying school, which Koehler and several Russians planned to organise in Canton. The Russians were serving in the Canton Air Force, but were allegedly prepared to "try something else". On 12 March Koehler visited the American ambassador to talk about export permits, but the American authorities found the whole affair suspect and decided a few days later to put an end to the whole plan.

Sun had died in March 1925 and was nominally succeeded by Hu Ham-min. His military successor was the Canton garrison commandant Chiang Kai-shek, who now became the real leader of the Canton Government. A National Military Council, which incorporated an Aviation Bureau (Hang-k'ung ch'u), was formed on 22 June with Chiang Kai-shek as chairman and on 1 July 1925 the Kuomintang (KMT, the Nationalist Party) proclaimed a National Government in Canton.

The NRA

The Whampoa Military Academy started to train officers

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[10] A not very reliable American report dated 22.11.23 lists three Curtiss JN-4s, two "seaplanes" and two "Gallaudets" (Curtiss HS-2Ls?). A Chinese source maintains that the party of Americans and Chinese going to Canton in 1922-23 brought with them one JN-4 and three N-9s.

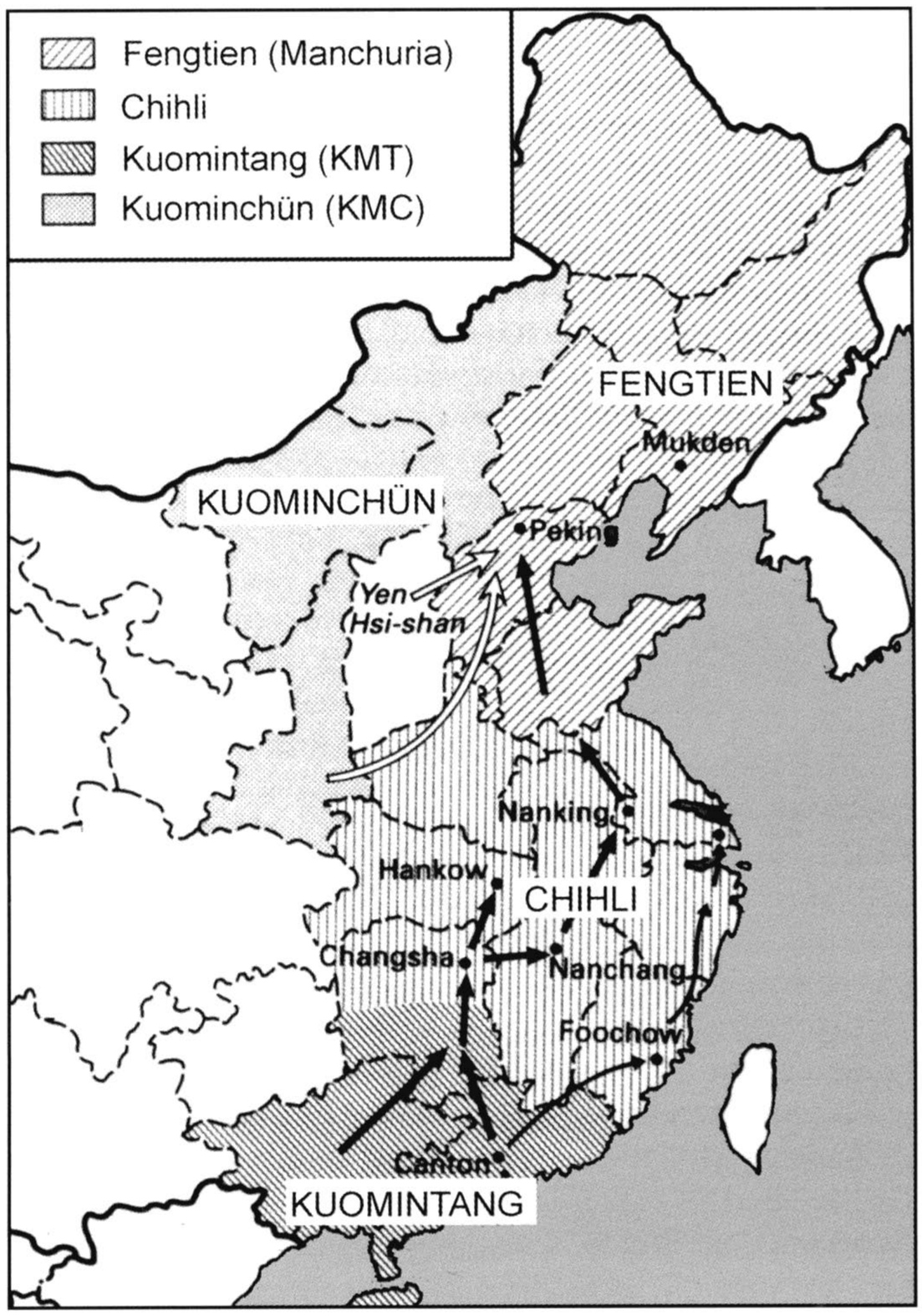
[11] Abbott later stated that when he left in April 1924 they had Curtiss JN-4D and JN-4H Jennies, Curtiss N-9s and HS-2L flying-boats.

for a reorganised army. It was called the National Revolutionary Army (NRA, Kou-min ko-ming chün) and was formally organised on 26 August 1925. The Aviation Bureau was headed by General Chang Ching-yü and there were Russian and German instructors. About 18 July 1925 Wang Ching-wei had been appointed "Chief of the Aviation Squadron". Walter, Heibert and von Greim were still in Canton by October 1925, but were still not able to realise any of the plans they were drawing up. The last German instructor was dismissed about October 1926.

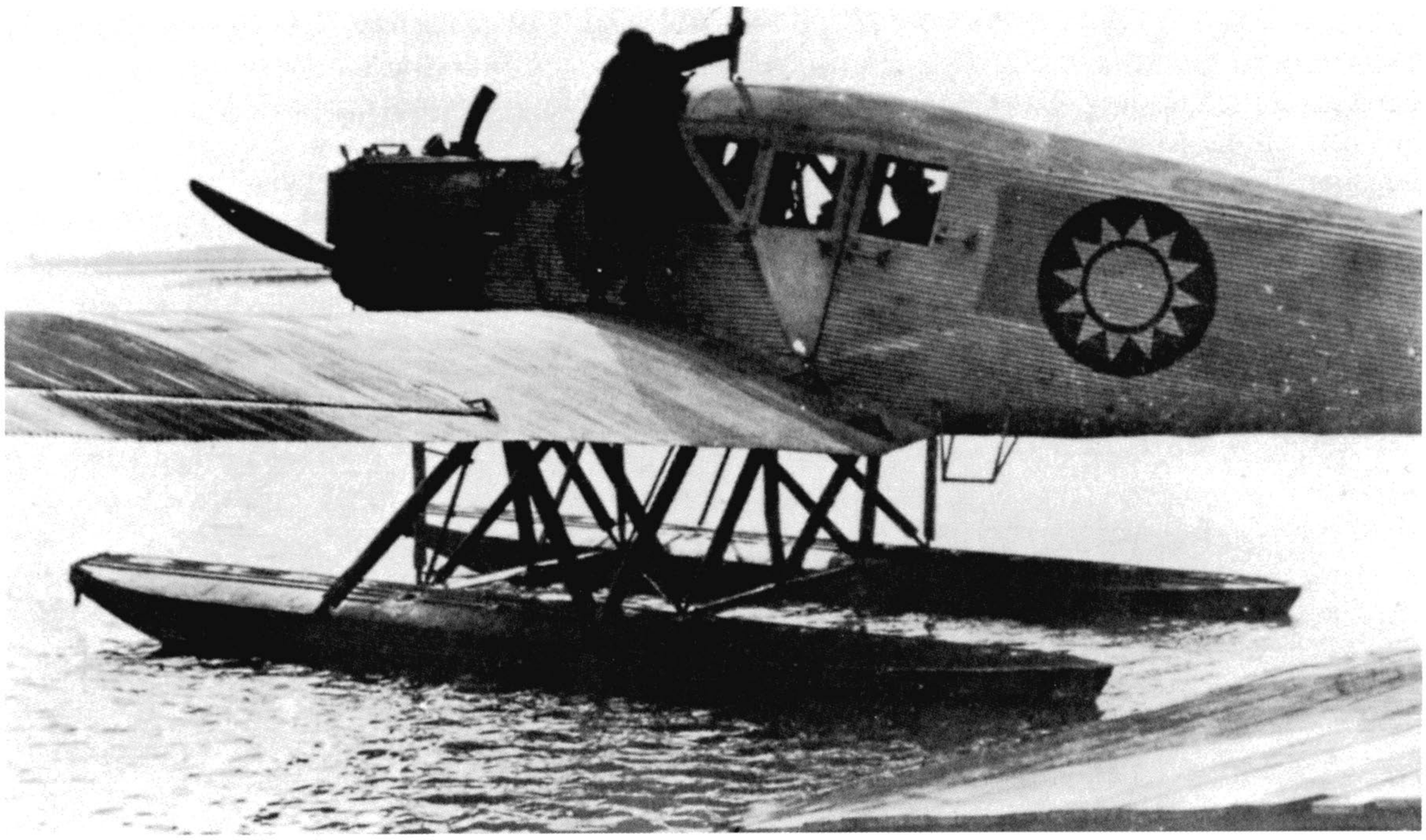
Aviation in Canton was now under firm Russian control. Chiang Kai-shek wrote to "Galen" on 26 June 1925 that he wanted Russian help to set up an aircraft factory and a larger aviation school. Russian adviser Uger was referred to as "Head of the Aviation Bureau" and Russian military aviation personnel started to arrive. On 1 July 1925 these included pilots Vasilii Sergeev, Aleksandr Kravtsov and Khristo Pakov, and observers Oskar Bazenau and Dzhon Talberg. Pilot Remizyuk and mechanic Kobyakov arrived some time later.

A Russian long-distance propaganda flight to China in July-August 1925 was officially a Moscow-Peking flight, but there might have been an intention to make a connection with Canton as well. Four of the participating aircraft, two R-1s, an R-2 and a Junkers F 13, went as far as Nanking, where they arrived on 18 August, but then returned to Peking. The first pair then continued to Tokyo, while the remaining two were sent to Vladivostok by boat.

The Russians were initially reluctant to send any aircraft to Canton, however, but on 28 September 1925 the Politburo had decided to send six aircraft. Two Junkers F 13 transports were also to be sent from Vladivostok. Another 15 aircraft were ordered for future delivery and plans were drawn up for the supply of arms and a total of 35 aircraft to the three National Revolutionary Armies at Canton (Chiang Kai-shek), Kalgan (Feng Yu-hsiang) and in Honan (Yüeh Wei-chün). On 19 October the number of aircraft intended for Canton was reduced to 12, but the first six of



The Northern Expedition of the NRA forces.



Junkers F 13 floatplane, which was delivered from the Soviet Union.

them were diverted to Kalgan, as it had been found difficult to have them shipped to Canton at that time.

After completion of the military operations, the Canton Government decided in June 1925 to designate a sum especially for reorganising aviation and a commission was sent to the USSR. A Society of Friends of Aviation (Kuang-chou hang-k'ung t'ung-chih hui) was organised for aviation propaganda. Airlines along the routes Canton-Swatow and Canton-Wuchow were proposed and money was collected for the establishment of a civil aerodrome. A second-hand Junkers F 13 was purchased from the Soviet Union and was later used for propaganda flights in Kwangtung. The best Chinese pilots were to be selected for training in the USSR and in September 1925 two Chinese pilots and six students were sent for a one-year flying training course.

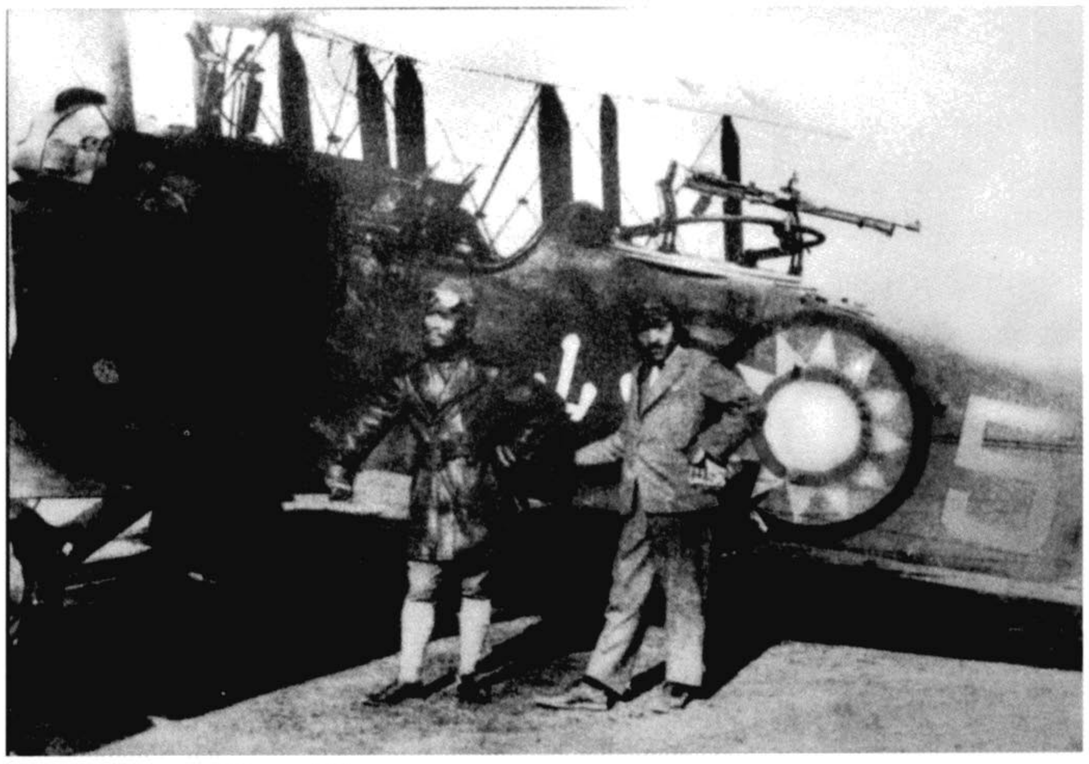
The Aviation Bureau was reported to have six land based aircraft and one hydroplane in 1925 and in mid-November an operational squadron was again activated. About March 1926 only four aircraft remained, of which just two were serviceable. A Junkers F 13, which was at Vladivostok since the Russian Moscow-Peking flight in the summer of 1925, was sold to Canton in January 1926. In April a second F 13 was converted into a floatplane and it was later shipped via Vladivostok to Canton.

The aviation school was adapted to preparatory training on Curtiss Jennies. In the near future Soviet-made U-1 trainers, which had already been ordered, were expected to arrive. The U-1 was a copy of the Avro 504K. Two more Avros and two DH.9s, with spare engines, were considered to be necessary for the school. The formation of a new mixed Russo-Chinese squadron was started and the delivery of six R-1s (Soviet-built copy of the DH.9A) was expected. In April 1926 Uger resigned as Chief of the Aviation Bureau and he left Canton on the 19th. A report dated May 1926 credits the Canton Air Force with three Curtiss JN-4 Jennies and a single Curtiss HS-2L. In June a number of flying students was sent to the USSR for further training.

The Northern Expedition

On 5 June 1926 Chiang Kai-shek was made Commander-in-Chief of the Army, Navy and Air Force. When a new Northern Expedition was launched on 1 July 1926, the NRA consisted of Chiang Kai-sheks's six Canton armies, the 7th Army (Kwangsi troops under Li Tsung-jen, Pai Ch'ung-hsi and Huang Shao-hsiung) and the 8th Army (Hunan troops under T'ang Sheng-chih). By September, Wu P'ei-fu had been defeated by the NRA at Hankow and Nanchang was taken on 9 November. Sun Ch'uan-fang's commander in Fukien, Chou Ying-jen, was defeated in October-December and Amoy and Fuchow was occupied. By the end of 1926 Hunan, Hupei, Kiangsi and Fukien had been taken. Troops that went over to Chiang were incorporated into the NRA, which grew bigger and bigger. Sun Ch'uan-fang had formed a new regime in Chekiang, but on 22 March 1927 the NRA reached Shanghai and Nanking fell on 24 March.

A Russian ship, the "Stanmopol" (possibly Stavropol) left Vladivostok for Canton on 20 April 1926 with several



R-1 "Chung Shan 5".

aircraft and a number of Russian and Chinese mechanics on board. Ammunition, machine guns, guns, shells and nine aircraft had been moved to Vladivostok for shipment to Canton. These supplies reached Canton in June and July. Six aircraft arrived early in June and R-1s were soon seen to be flying every day over Tung Shan. The nine aircraft probably consisted of six R-1s and three U-1s. British intelligence considered that at least 8-10 R-1s, possibly one or two Junkers F 13s, and 18 Russian aviators had come to Canton from Vladivostok during July and August 1926.

A number of Chinese mechanics from Hong Kong were engaged, but only Soviet personnel flew the R-1s. Vasilii Sergeev returned to Canton in July 1926 and was appointed Chief Aviation Adviser. The Aviation Bureau included a military department, a flying school, workshops and a civil department (which was the Society of Friends of Aviation). The field department under the Chief of the Air Force Lin Wei-cheng (Lan Huei-hsing)[12] went out to the front. Colonel Chang Ch'ang-yen was appointed Director of the Military Department and acting chief of the Air Force on 20 July 1926. He succeeded General Chang Hsiung-yi, who became Commissar for Aviation. Apparently the Soviet commissar system was adopted by the NRA.

The NRA was marching from Kwangtung into Hunan. Operational air squadrons and support units were being set up for the front and on 10 August the preparations had been completed. Airfields had been found and war plans for the air force had been made. It had taken about a month to transfer equipment, personnel and fuel to the front. The air force's debut was quite unsuccessful, however. Three R-1s (s/ns 1, 2 and 3) that took off for Hengchow on 19 August all landed at Paoching and were damaged in the process. The crews consisted of five Russians[13] and one Chinese officer. One machine had to be sent back to Canton for repairs and Sergeev and Kostyuchenko left to fetch a new R-1 in Canton. Russians Kozhura and Kobyakov took off from Canton in a Junkers F 13 floatplane about 20 August and

[12] Lin Wei-cheng had learnt to fly at Redwood, California. He later became head of the Kwangsi Air Force.

[13] Including Sergeev, Kostyuchenko, Kravtsov and Tal'berg.

On arrival in Nanking the NRA found several aircraft left by Sun Ch'uan-fang: two Breguet 14A2s, five Caudron C.59s, a Morane MS 35 and three Schreck FBA 17 amphibians

headed north. They mistook the city of Kian for Changsha, however, landed there and were immediately captured. The NRA freed them on 19 September, however.

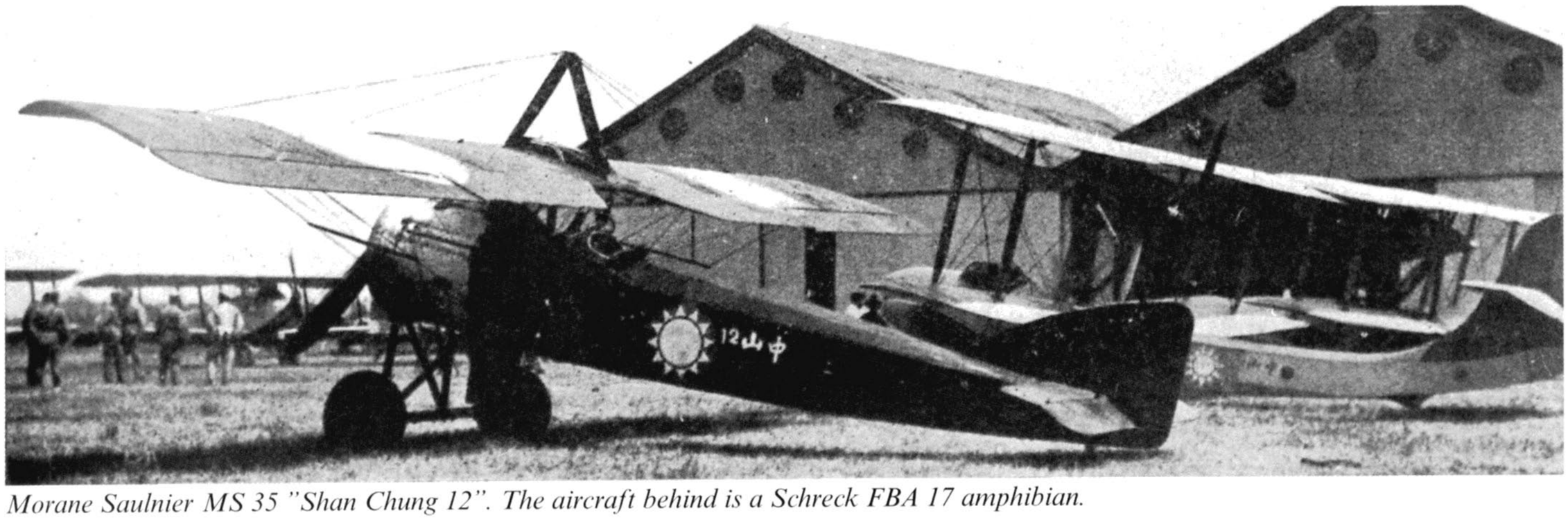
The R-1s flew strafing, bombing and leaflet dropping missions during the siege of Wuhan in Hupei, and over two hundred bombs were dropped. The Field Department moved to Wuchang on 6 September and Sergeev arrived there with the new R-1 on the following day. On 28 October the R-1s flew over the Shansi front and allegedly the psychological impact was considerable. Wuhan became the main base and airfields were set up at Changsha in Hunan and Chushan (?) in Shansi. Several problems had been noticed during this first campaign. There was a severe lack of accurate maps, the R-1s suffered from the great humidity and the Chinese mechanics were not properly trained to service the R-1.

Air Force Chief Lin Wei-cheng (Lam Huei-hsing) returned from the front in September. The Aviation School, which was now headed by Colonel Wang P'ing-kung, had two serviceable Curtiss Jennies and one Avro. Eight Korean and Chinese students, including one woman, were at the school, all other pilots had been sent out to the front with all the observer students. The Chinese were not considered to be sufficiently trained to fly by themselves, however, and all R-1s were still piloted by Russians. An Avro and a Curtiss were taken from the school and sent to the front and by October the school had only one serviceable Curtiss left. In addition there was an Avro and a Curtiss under repair.

Colonel Yang Ch'ung-yu was in charge of the workshops. The Aircraft Section with five men working under a Russian mechanic were repairing R-1s No 1 and No 6, which were being used for practice flights at Taishatau aerodrome. Three R-1s were at the front with two Russian pilots and were used for scouting, bombing, photographic reconnaissance and liaison.

Expansion Plans

There were plans to expand the Air Force into two squadrons



Morane Saulnier MS 35 "Shan Chung 12". The aircraft behind is a Schreck FBA 17 amphibian.

with seven aircraft each, one manned by six Chinese pilots training in the USSR since September 1925, and the other by Russians. Another two squadrons was to be formed with Chinese pilots training in the USSR since spring 1926, and later another two squadrons with those who started their training in June 1926 were to be added. The total number of aircraft required was 48. Chiang ordered on 11 November 1926 that new aircraft be bought from the USSR and on 30 November he decided to send more pilot students there.

At the same time pilots who had belonged to the famous Lafayette Escadrille were approached by Canton agents in Paris, who promised to hire them in the Canton Air Force.

On 13 January 1927 one R-1 and three Curtiss JN-4s were seen at Canton and in February 1927 the arrival of new aircraft sufficient for two squadrons was expected. A purchasing commission headed by Air Force Commander General Lin was to go to Moscow to purchase the aircraft and 19 student aviators, mechanics and observers were to be sent for training. The "Hong Kong Daily Press" reported that not all aircraft that had already been paid for had been delivered.

In March four R-1s, a U-1 and an F 13 floatplane were reported to be at Wuchang, two seaplanes were noted in the seaplane hangar at the Taishatau aerodrome on Honam Island. There were possibly some Avro and Curtiss machines inside other hangars.

In December 1926 Russian adviser Blyukher's staff moved to Nanchang and on 27 April 1927 the Politburo in Moscow ordered all Russian advisers to leave Canton and go to Hankow immediately to serve the Wuhan Government that had been set up there. On 3 March the Politburo had decided that all arms deliveries forthwith were to be arranged by an organisation called VOSTVAG. A Wuhan Governments delegation was in Moscow in April-May to place new orders, but on 2 June the Russians decided to postpone all aircraft deliveries to China for the time being. All advisers left China in July 1927 when the Wuhan Government broke with the Chinese Communist Party and V E Sergeev, who tried to leave via Shanghai, was arrested on 18 July, although Chiang Kai-shek later freed him. Blyukher was the last one out of the country on 11 August 1927. On 24 March the Politburo had decided to award the Red Banner Order to pilots Sergeev, Kravtsov, Tal'berg, Bazenau and mechanics Kovrizhnikov and Kichtenko for their service in China.

On arrival in Nanking the NRA found several aircraft left by Sun Ch'uan-fang: two Breguet 14A2 reconnaissance-bombers, five Caudron C.59 trainers, a Morane MS 35 trainer and three Schreck FBA 17 HMT2 amphibians. There was also a dismantled and unserviceable machine of unknown type in a hangar. All aircraft were immediately incorporated into the Canton Air Force and painted with the 12-pointed star national insignia adopted by the KMT.

Chiang Kai-shek set up a new government in Nanking in April 1927 and the newly captured French types and a number of Jennies and R-1s were inherited by the Nanking Air Force. A few Jennies and R-1s remained in Canton and were later incorporated into the new Canton Air Force created there by Li Chi-shen.

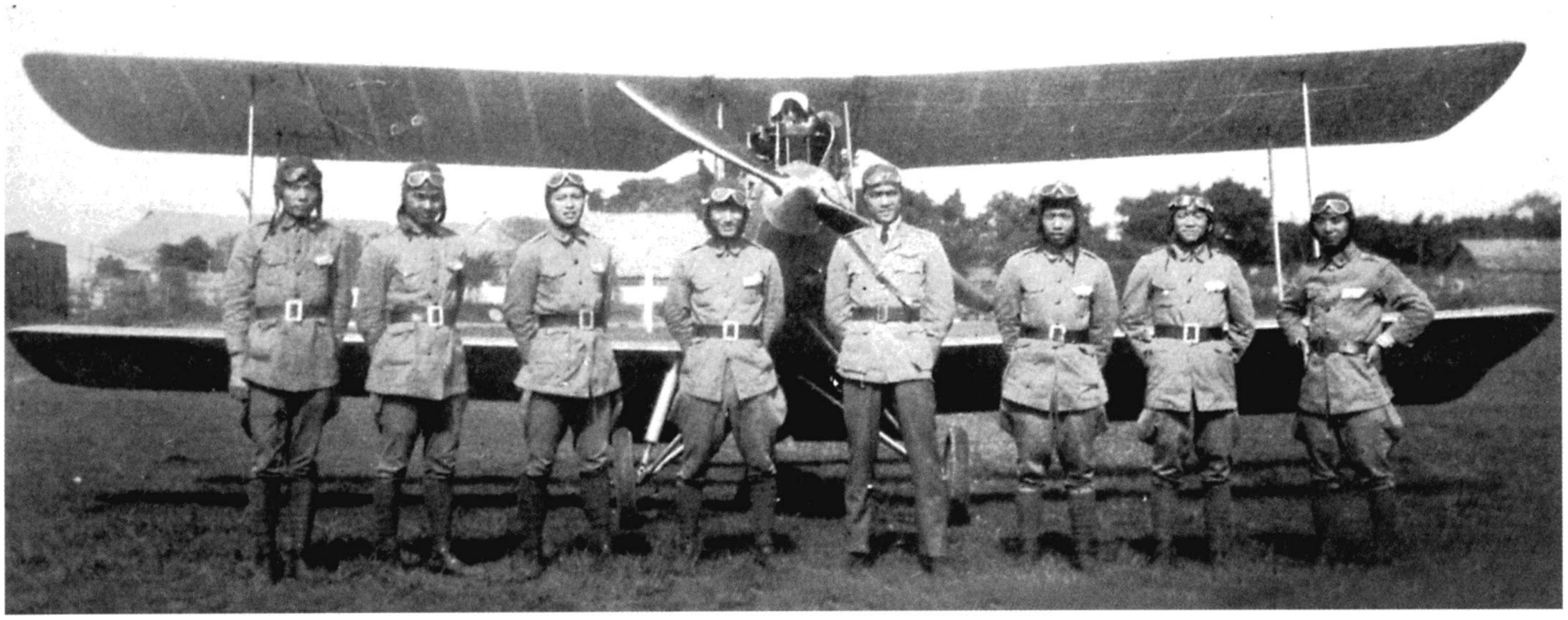
Known Canton Aircraft Serial Numbers

Rosamonde	1
Curtiss N-9C	4, 5, 7
R-1	Shan Chung 1 to 6
Breguet 14	Shan Chung 2, 23
Caudron C 59	Shan Chung
Schreck FBA 17	Shan Chung 11(?)
Morane Saulnier MS 35	Shan Chung 12

Aircraft used in Kwangtung until 1927

Type	Quantity	Year	
Curtiss Pusher	2	1915	
Tsuzuki No 3 (Nieuport IVG)	1	1916	
Sakamoto No.6 (Martin)	1	1916	Probably to Peking
Christofferson biplane	1	1916	To Peking
Curtiss floatplane	2	1917?	
Curtiss HS-1L/HS-2L	6-7	1920	
Curtiss H-16	2-6	1920	
Aeromarine 39B	6-11	1920	
Curtiss JN-4D Jenny	8-13	1920	To Nanking and second Canton Air Force
Friesley Falcon	1	1922	
Curtiss N-9C	>3	1923?	
Rosamonde	1	1923	Built locally. Another three not completed.
Junkers F 13	2	1925	One to second Canton Air Force
R-1 (DH.9A)	6?	1926	To Nanking and second Canton Air Force
U-1 (Avro 504K)	3?	1926	
Breguet 14A2	2	1927	To Nanking
Caudron C 59	5	1927	To Nanking
Morane Saulnier MS 35	1	1927	To Nanking
Schreck FBA 17 HMT2	3	1927	To Nanking

Second Kwangtung (Canton) Air Force



Avro Avian trainer with personnel of the Canton Air Force.

After the establishment of a KMT government at Nanking in April 1927 Canton came under the control of the local garrison commander, Marshall Li Chi-shen. He was appointed Chairman of the Kwangtung Provincial Government on 20 June 1928. However, although officially subordinate to Li, Generals Ch'en Chi-t'ang and Ch'en Ming-shu were the real rulers of Kwangtung.

A number of old aircraft were apparently left at Canton in 1927 and not taken to Nanking and these were taken over by the new Canton Air Force under Li Chi-shen. There were six machines at Taishatau aerodrome, Canton, in December 1927: four Curtiss JN-4 Jenny trainers, an R-1 and a French-made aircraft of unknown type. Two new aircraft were reported to have arrived at Kuper Island, Canton, late in June 1927, both armed with machine guns. About 20 new aircraft (R-1s probably) were rumoured to have been ordered earlier during the Northern Expedition, but were not delivered after relations with the Soviet Union had been severed in July 1927.

A Junkers F 13 floatplane remained in service and was used in the Wuhan campaign. In early November it landed with engine trouble on the Yangtze River in an area under enemy control. It was hit by enemy fire and burned out shortly after the crew had escaped in a fishing boat.

Li Chi-shen started to obtain new aircraft for the Canton Air Force and in May 1928 17 French aircraft were delivered. This consignment consisted of eleven Breguet 14 bombers, four Hanriot HD 14 trainers, a Morane Saulnier and a Caudron (C 59?). The aircraft had been ordered through a German agent named Thesing, who had travelled with the Director of the Canton Aviation Bureau, Chang Huei-ch'ang[1], to Europe to buy equipment. The whole transaction turned out to be a scandal because of the high commission paid and the newspapers wrote that bribes had been involved. Several parts for the aircraft did not fit and all aircraft could not be assembled. Only three were new, the others were old and worn out.

In the autumn of 1928 Marshal Li Chi-shen and the Governor, General Ch'en Ming-shu, decided to spend considerable sums on aviation and Chang Huei-ch'ang was instructed to acquire another ten aircraft. There were two old hangars and two new ones under construction at the Canton Aviation Bureau Aerodrome at Taishatau, and the flying school was in operation.

There was always an urge in China to achieve self-sufficiency and a small two-seat biplane with a 90 hp Curtiss OX-5 engine was designed and built by the Aircraft Works attached to the Bureau. It was completed in December 1928. These workshops, which until 1927 only overhauled, repaired and rebuilt aircraft, were manned by artisans previously employed by various American firms and were situated at a factory inside the city and not at the aerodrome. Chief engineer Mei Lung-an, a Chinese-American formerly associated with the American Laird Company, was appointed head of the factory in 1927.

The new aircraft was called Yang Ch'eng (The City of the Five Rams, an ancient name for Canton), as were all subsequent designs of the factory. First flown on 29 December 1928, it was christened "Chengkung" (Success) and celebrated by the Canton Aeronautical Association as the first Chinese-made aeroplane (which it was not!).

Lam Wei-shing was negotiating the purchase of Junkers F 13 transports in June 1928 and a purchasing mission headed by Li Chi-shen went to Germany in July to buy aircraft, material and production equipment. In November negotiations were taken up with Junkers again, and the mission was offered three Junkers K 53 two-seat bombing and reconnaissance aircraft and a spare Junkers L 5 engine. Two

[1] Chang Huei-Ch'ang learned to fly at the Curtiss School in New York prior to 1914 and later became known as China's "Charles Lindberg".

Ryan B-1 Brougham named "Kwangchow" ("Canton"), which became famous because of a long-distance flight made in 1928..

of the aircraft were to be supplied in the form of kits for local assembly and the equipment for an aircraft factory with a capacity of three to six K 53s per month was to be supplied. An order for a single example was finally placed and confirmed on 11 December 1928. It was shipped from Junkers subsidiary AB Flygindustri in Sweden on 3 July 1929.

"The Chinese Lindberg"

Charles Lindberg's flight over the Atlantic inspired the Canton leaders to order two Ryan B-1 Brougham cabin monoplanes from L E Gale & Co in 1928. The first arrived on 9 October and was assembled at Taishatau. The second machine was fitted with floats and arrived on 20 November. The Ryans were intended for airmail transport but both were first used for long-distance flights that were much publicised in China. On 11 November Director Chang Huei-ch'ang and Colonels Yang and Wang took off in Ryan landplane "Kwangchow" ("Canton") and flew from Canton to Hankow and then continued to Nanking, Peking and Mukden. They returned via Tientsin, Shanghai and Nanchang, and were back in Canton on 18 December. General Chan Hing-wan (Chen Chin-yun), Colonel Chau and a mechanic flew the floatplane, which was christened "Chukiang" (Pearl River), to Fuchow on 1 December, continued via Ningpo, Hangchow, Nanking, Nanchang, Hankow, Changsha and Wuchow, and finally returned on 30 December. The "Chukiang" later made a mail flight to Nanking on 22 February 1929.

In January 1929 there were two large brick hangars at Taishatau aerodrome and a new hangar was under construction. The Training School was under the command of Colonel Chau Yuk-hang (Chow Chia-heng), but there were only three training aircraft. The inventory of the Canton Aviation Bureau consisted of the 17 French aircraft, two Curtiss Jennies and two Ryans. The Ryans had been fitted with machine-guns. New aerodromes were being constructed at Namhung, Wuchow, Kweihsien and Waichow. Those at Shiuchow/Shiukwan and Shiuking had already been completed. All aviation in Kwangtung was organised under the Aviation Bureau in 8th Army Group Headquarters with General Chang Huei-ch'ang as head.

On 5 January 1929 the Aviation Bureau signed a contract with Boyd & Co for the delivery of 10 Avro Avian two-seat trainers and 10 spare ADC Cirrus III engines. Four aircraft were to be shipped immediately to Hong Kong and were sent with SS "Troilus". They arrived in Canton on 1 March. After the first machine had been assembled, the Commanding Officer of the Training School, Colonel Chau Po-hang made the first flight in it on 6 March, and at the end of the day instructors of the school made an aerial display with all four aircraft. The remaining six arrived later in the same month.

War With Kwangsi

On 21 March 1929 Li Chi-shen was arrested by Chiang Kai-shek in Nanking and General Ch'en Chi-t'ang took over as ruler of Kwangtung. All Kwangsi troops were ordered out of Canton and on 2 April Ch'en took command of the Kwangtung Army. On 31 March Kwangsi troops attacked the NRA in the Wuhan area, but they were partially defeated at the end of April. Chiang Kai-shek now decided to suppress all resistance in Kwangsi and ordered an attack. On 6 May Ch'en sided with Chiang against Kwangsi and by the end of the month all Kwangsi troops had been driven out of Kwangtung.

At least four Breguet 14s, two Avians and one Ryan were used in action during this war. The Avians served in the observation role and as there were no bomb racks for the aircraft, bombs were dropped over the edge of the cockpits.

This Avro Avian carries serial number "21", crika 1930.

Two squadrons with six aircraft each were formed, the second only on 4 July under the command of Wang (1st) and Yang (2nd). Both units returned from Shiuking to Canton in July.

In June 1929 five two-seat Waco 220 Taperwings (Model ATO) arrived in Hong Kong. They had been purchased from Waco representative L E Gale & Co on 2 April and had left the USA in May. On 1 July they were shipped on SS "Foo Shing" to Canton, where Earl F Baskey, L E Gale company pilot, assembled, test flew and turned them over[2].

In September General Chang Huei-ch'ang took off from Canton with a squadron consisting of five Wacos and two Ryans. They were heading for Nanking, but five of the aircraft crashed or force landed on their way to Amoy, which was the first stop. Two of them, " Pan Yu" and "Nam-hoi", piloted by Chang Huei-ch'ang and Colonel Young Kuan-yu reached Shanghai and continued to Nanking.

An order had been placed with a French firm for 10 (or 20?) new 300 hp Renault engines for the Breguets and six of these were delivered in September 1929. At that time there were about 150 pilot and mechanic students and 15 instructors, most foreign-trained, at the Taishatau school, which was under the command of Colonel Chau. There were about 25 skilled pilots. Landing grounds at had been established at Pakhoi, Samshui, Wuchow and Nanning and in the autumn of 1929 work started on a new aerodrome at Shoukouling (Lean Dog Hill), a few miles to the east of Canton on the Canton-Kowloon railway.

[2] Other reports say that 5 Waco and 10 three-seat aircraft had been ordered. According to the press these had already arrived in Hong Kong and were waiting to be shipped to Canton by the end of June 1929. SS "Foo Shing" left Hong Kong for Canton on 1 July with nine aircraft on board.

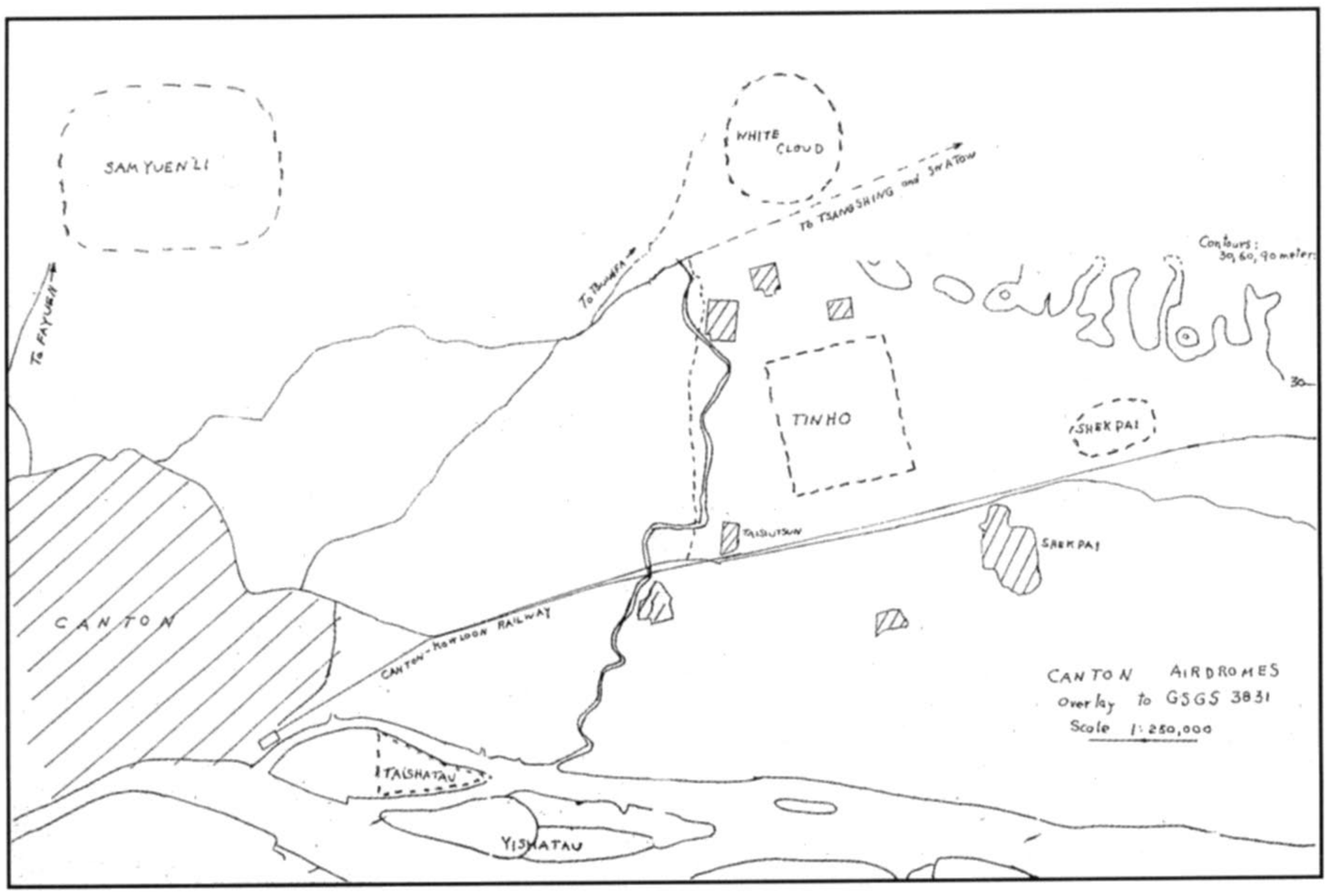
General Chang Huei-ch'ang was appointed Chief of the Aviation Department in Nanking on 12 September 1929 and left his post in Canton to former squadron commander Huang Kuang-jui (Freddy Wong/Wong Kwang-yui).

In October 1929 General Chang Fa-k'uei of Hupei, who intended to set up a new government of his own in Canton, decided to try to take the city and started to concentrate his troops at the Kwangtung border. On 22 November Ch'en Chi-t'ang responded by declaring war on Chang Fa-k'uei and Kwangsi. An attack by Chang against Canton followed on 6 December, but failed and the invaders soon withdrew back to Kwangsi.

At the beginning of this war the following aircraft were at Taishatau: four Curtiss Jennies, one R-1 (DH.9A), 18 French aircraft, ten Avians, two Ryans and five Waco trainers. A number of these were despatched to West River before the fighting started, a field headquarters had been established and the airfields at Wuchow and Shiuking were in use. At least 12 aircraft of the Canton Air Force were used for bombing and reconnaissance in the operations against Kwangsi and at the end of November seven aircraft returned to Canton from Hankow. Five that returned from Honan were immediately sent to the North River region.

In January 1930 Chang Huei-ch'ang, now Head of the Aviation Department in Nanking, visited Canton to try to persuade the pilots there to join the Nanking Air Force. The Canton Aviation Department was to be dissolved and the 6th and 7th Squadrons of the Nanking Air Force were instead to be located in Kwangtung. Chang was not successful and as a protest against this intervention the Canton pilots went on strike!

New airports at Yingtak and Yungyuen in North Kwangtung were completed in May 1930 and on 26 May ten aircraft deployed from Canton to these places for ope-



Map showing the locations of Canton's aerodromes: Taishatau was replaced by Shekpai/Shoukouling (Lean Dog Hill) and the other three were built later. Samyuenli was also known as Pakwanshan (White Cloud Mountain).

rations against Kwangsi troops in South Hunan. This campaign continued into the summer and in July Cantonese aircraft bombed Nanning in Kwangsi. Chang Fa-k'uei was completely defeated and left for Hong Kong.

One of the Avians crashed and was written off on 26 June 1930 and in July three new examples of this type were purchased from the FEACo. They were delivered to Taishatau at the end of the month and were fitted with Cirrus engines locally from the stock of spare engines supplied in 1929. The new Avians were fitted out for use as light bombers. In 1929 four Yang Ch'eng two-seat biplanes (c/ns 1-4, s/ns 51-54) had been built by the Canton Aviation Bureau Factory. Very little is known about these aircraft, which are sometimes described as modified copies of the Vought Corsair. S/n 53 had a 180 hp Hispano-Suiza engine. Yang Ch'eng s/ns 55-58 were built in 1930. S/ns 56 and 57 "Nanhsiung" had 200 hp Pratt & Whitney Wasps and were armed with rearward-firing machine guns.

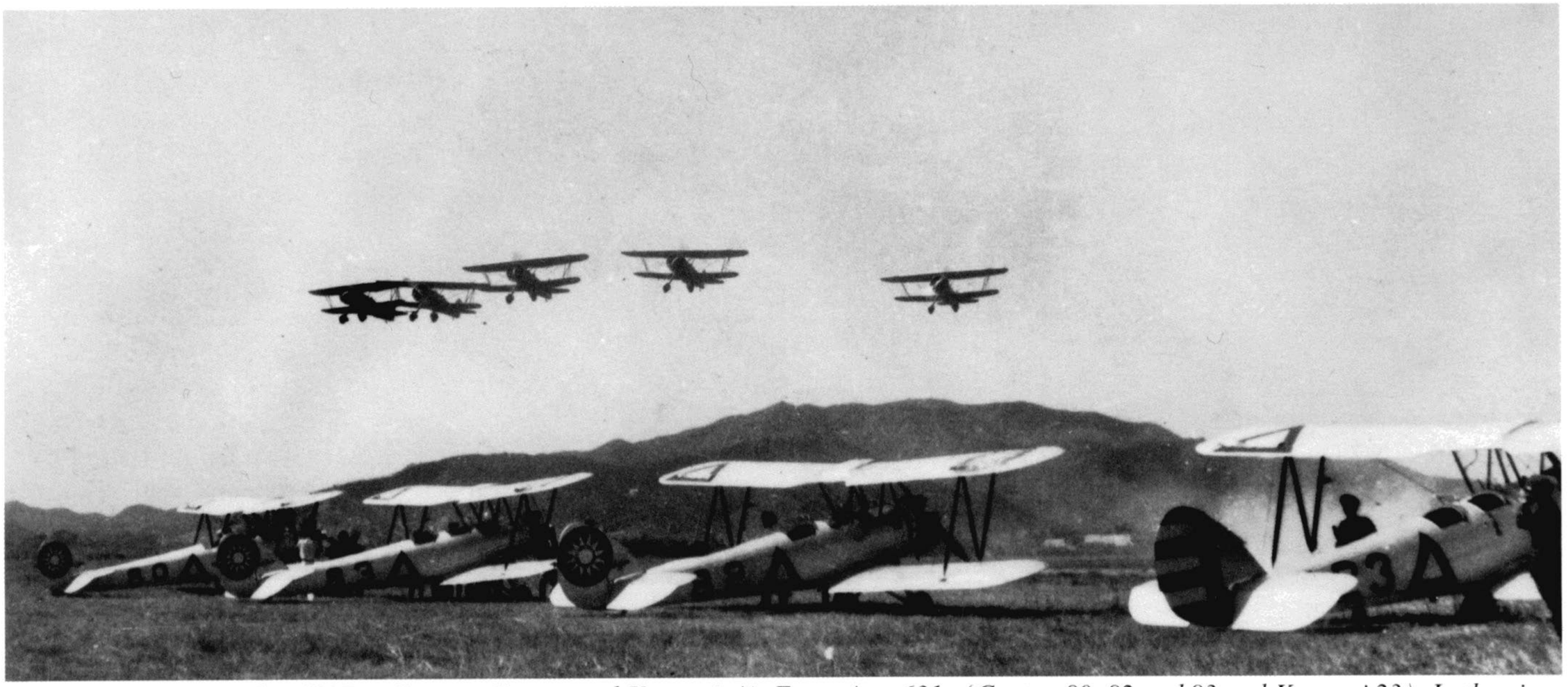
In 1930 the staff, equipment and students of the civil Amoy Commercial Aviation School were taken over by the Canton Air Force and on 17 January 1931 the 12 former civil students graduated with the 4th class of the Canton Aviation School. The Amoy school had seven aircraft in 1929, two Klemm L 25 Ias, a Raab-Katzenstein Kl I Schwalbe, an RK 2 Pelikan (crashed), an RK 9 Grasmücke and two Alexander Eagle Rock A-2s, but it is not known how many of these were serviceable in 1930-31. In August the school finally went into bankruptcy. It was taken over by the Canton Air Force and on 10 September 1930 it moved with its staff, 13 students, five aircraft and all equipment to Canton. At least the Eagle Rocks were taken over by the Canton Air Force and were still in service by 1933.

Civil Air Service

Ch'en Chi-t'ang had plans in October 1930 to set up an air service in Kwangtung and Kwangsi with routes from Canton to Swatow, Nanning and Haikow. Military aircraft and personnel were to be used. The scheme was approved by Nanking in December. On 1 December 1930 a Canton-Wuchow service was opened, initially with two aircraft: the "Namhung", which had been built at the Canton Aviation Bureau Factory, and a Ryan named "Kukong" (possibly "Chukiang"). On 31 December "Kong Ping", a "commercial aircraft", made an emergency landing in Wuchow. When Ch'en broke with Nanking in April 1931 all aircraft and personnel used on the airlines were immediately transferred back to military service.

Although nominally under Nanking, Ch'en Chi-t'ang attempted in all possible ways to retain his independence in Canton. After Li Chi-shen's arrest by the Nanking Government in 1929 Ch'en had acted as military Commander of Canton. On 28 April 1931 he occupied Canton and forced civil Governor Ch'en Ming-shu, a supporter of Chiang Kai-shek, to leave the city. Ch'en immediately increased

Avro Avians of the Canton Air Force.



Aerial display, September 1935 in Canton. Canton and Kwangsi Air Force Avro 631s (Canton 80, 82 and 83 and Kwangsi 23). In the air five Cantonese Curtiss Hawks. (Wings of China)

military expenditure. He declared his opposition against Nanking and started to plan a war against Chiang Kai-shek together with the Kwangsi generals. On 15 May Nanking troops stationed at Huangpu were disarmed by Canton troops.

On 1 June 1931 a new "National Government" was set up in Canton. As the Nanking Government was occupied with fighting the communists in Kiangsi they asked for a compromise, but Ch'en saw his opportunity and started to prepare for an attack on Nanking. At the beginning of August Kwangtung troops crossed the Hunan border. Both sides were reluctant to start the fighting, however, and on 18 September Japan occupied Manchuria, which completely changed the situation. On 27 October Canton and Nanking representatives met at a peace conference in Shanghai and an agreement between the two parties was finally reached on 7 November. Ch'en refused to comply with the agreement, however, and the conflict ended with Chiang Kai-shek being forced to withdraw from all his posts on 15 December.

Independence

The Canton Government was replaced by a Southwest Political Council (Hsi-nan hsing-cheng-ch'ü) and a Southwest Military Branch Council on 3 January 1932. This step made Kwangtung and Kwangsi practically independent of Nanking. Although the military leaders at Canton and Nanning represented on paper the five provinces Kwangtung, Kwangsi, Yünnan, Kweichow and Fukien, they had authority only over the first two.

A National Aviation Conference had been convened in Nanking in April 1931 with the intention to amalgamate the two air forces at Canton and Nanking. There was a big difference of opinion between the two factions and on 29 April the Canton delegates and Cantonese pilots in Nanking quickly left the city and returned to Canton. Chang Huei-ch'ang, the Director of the Nanking Aviation Department, left with his compatriots and returned to Canton as well and it was reported that several pilots defected to Canton with a number of Douglas O-2MCs and Vought Corsairs.

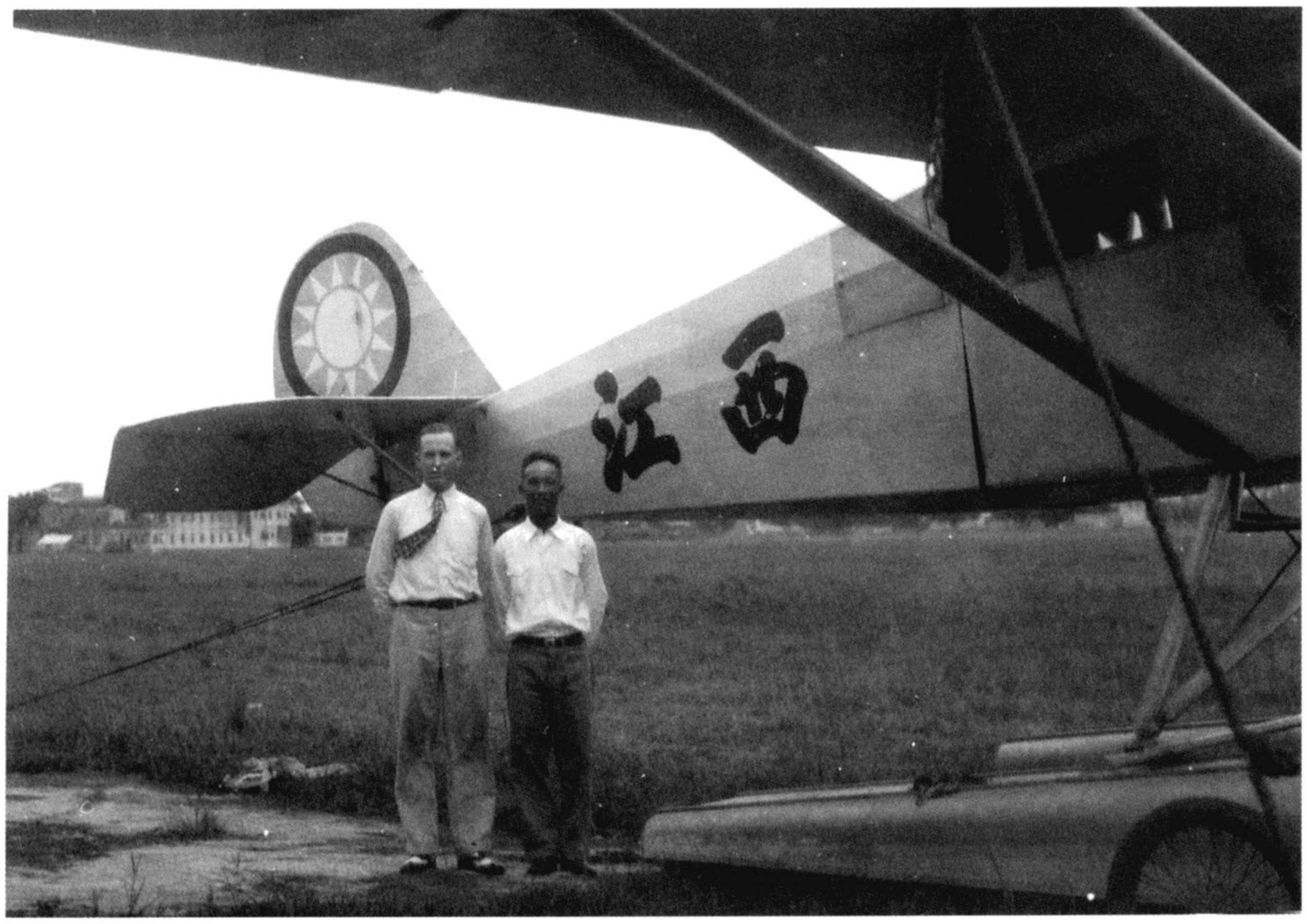
British and German intelligence reported in August 1930 that Canton agents had managed to buy two American aircraft in Hong Kong. They had originally been ordered by Kwangsi, but had been detained in Hong Kong. An American report dated 4 November identified them as American cabin planes, but it seems that these reports were unfounded speculation. American aircraft *were* acquired, but did not arrive in China until in 1931.

Six Waco CSO Straight Wing single-seat light military biplanes fitted with machine-guns and bomb racks were ordered from L E Gale & Co. They left the factory in December 1930, were shipped on SS "President Pierce" and SS "President Jackson" and arrived in Hong Kong in January 1931. In addition the FEACo delivered three new Avro Avian trainers to Canton in July 1931.

On 13 May 1931 the Canton Aviation Bureau ordered three Junkers K 47 two-seat fighters from Siemsen & Company. They were shipped from Hamburg on SS "R C Rickmers" on 4 July. Nanking got to know about this and demanded delivery to them instead, promising to pay the extra cost. The aircraft were finally landed at Wusong on 22 August and were "seized" by Shanghai customs. They were then delivered to Nanking where they joined seven other K 47s sold there earlier.

In July Canton tried to purchase via E G Meeker & Company eight Lockheed Vega fast single-engine transports for immediate delivery via Hong Kong. The aircraft were to be converted for military purposes by mounting machine guns. In this case the Nanking Government intervened early and no export licence was granted by the US Government.

There were several rumours about other aircraft deliveries to Canton. Early in July an American intelligence report stated that eight military aircraft ordered by the Can-



Ryan B-5 Brougham floatplane "Hsikiang" with American aircraft salesman W G Brophy standing in front of the tail.

ton Government were expected to arrive in Hong Kong shortly from England and Germany. The Canton Aviation Bureau had confirmed the information and the aircraft were to be delivered to a Cantonese gunboat in Hong Kong. Three of them were probably the Junkers K 47s mentioned above. Representatives of the Aviation Bureau also said that an order had been placed with an American company for 12 American military aircraft.

An Armstrong Witworth AW 16 single-seat fighter flew from Hong Kong to Canton on 8 September 1931. Another two followed in October and three more at the beginning of 1932. At about the same time six new Avro Avians were added to the Canton Air Force. The only other known aircraft delivery to Canton in 1931 not already mentioned is a batch of five Ryan B-5 Broughams, of which two were fitted with floats. At least one of them was fitted locally with bomb racks under the fuselage. In addition the Canton factory built three two-seat aircraft in 1931.

Captain A V Harvey left the FEACo temporarily in June 1931 to work as advisor to the Canton Aviation Bureau and Australian Squadron Leader Garnet F Malley was engaged as aeronautical adviser to the Kwangtung Government in Canton in 1931. He was to remain in this capacity until 1936[3].

Air Force Head Defects

General Chang Huei-ch'ang was replaced as head of the Canton Aviation Bureau by General Huang Kuang-jui (Freddy Wong), who returned to this office in May 1932. In the previous month Chang Huei-ch'ang had left the city with 90 Canton Air Force personnel to establish his own rebel air force! They moved to Kiungchow on Hainan Island, south of Kwangtung mainland, apparently taking two Ryan B-5 Broughams with them. In November they moved on to Changchow to join the Fukien Rebellion.

Chang Huei-ch'ang had placed an order on 26 March 1932 with F Feld & Company for nine Focke-Wulf military aircraft, but these were never delivered. He also ordered five Douglas O-2MC-3 reconnaissance-bombers in July 1931 through a representative in South China and they arrived in Hong Kong before mid-June. The Canton Government was of course determined to take over them, but Chang, who was busy setting up his own air force on Hainan Island, maintained that they had been ordered for him personally! They were finally sent to Canton in August 1932.

The FEACo delivered six two-seat Armstrong Witworth Atlas II reconnaissance-bombers in March 1932, and sold (or delivered) another three Atlas IIs and three AW 16s in June.

A few more American aircraft were obtained during the same year, including a two-seat Arrow Sport and on 9 December 1932 the Chief of Staff, General Art Lim (Lin Fu-yuan/Lim Fuk Yun), ordered four Curtiss-Wright Trainers, ten machine guns and ammunition from the USA. The "China Airways Company" acted as a front for the Canton Government in order to make possible the import of the aircraft without the consent of the Nanking Government. The Curtiss-Wright aircraft were also known as Travel Airs. Captain Jones of Arnhold & Company sold six de Havilland DH 60 Moth trainers to Canton in the summer of 1932, but four of them were allegedly damaged or destroyed in crashes within a few months.

By August 1932 the aerodromes at Taishatau, Sha Ho (Tung Shan) and Shiuchow were in use. The first two could accommodate 40 and 30 aircraft, respectively. A new aerodrome was being constructed at Shekpai (Shoukouling). Students received primary training at Sha Ho and advanced training at Taishatau. The aviation school was expanded in 1932 and more than 130 students were under instruction by the end of that year.

By December 1932 the aircraft inventory of the Kwangtung Air Force consisted of six Atlas IIs, six AW16s, 10 Avians, six Moths, a Tiger Moth, six Douglas O-2s[4], four Corsairs, a Caudron trainer, two Breguet 14s, a Fleet trainer (110 hp Kinner engine) and 15 aircraft made in Canton (230 hp Whirlwind engines). The single DH 82 Tiger Moth trainer was former FEACo demonstrator, VR-HAR, which was demonstrated in Canton in April 1932 and then sold.

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[3] American Captain Bert Hall apparently had an appointment for some time as an advisor in Canton as well.

[4] Only five were delivered!

Curtiss Hawk I with donation markings.

Three more DH 82 Tiger Moths and "four US Navy trainers" with 165 hp engines were on order. The three Tiger Moths, which were delivered by Arnhold in January 1933, were fitted with cameras and machine guns. By the beginning of 1933 the Canton factory was reported to have turned out 22 aircraft powered by American engines, including at least one single-seater.

The Canton Air Force had seen some action against the Japanese at Shanghai in February 1932 and during the summer in the anti-Communist drives on the Kwangtung-Kiangsi border. A squadron with six Waco CSOs, three Vought Corsairs and three Ryans, commanded by Ting Chi-hsu, was sent to defend Shanghai. One squadron of the Canton Air Force was to be stationed at Swatow and in January 1933 a "bombing plane" was sent there and christened "Swatow". On 8 February pilot Woo Chi-yat was killed when a Canton Government "fighting aircraft" crashed.

Air Force Commander, General Huang Kuang-jui ordered 18 Curtiss Hawk I single-seat fighters from the Inter-Continent Corporation in May 1932 and these aircraft arrived in Canton in June 1933. It is possible that nine Vought V-65C Corsair two-seat bombing and reconnaissance biplanes were delivered by United Aircraft Exports (UAE) in August 1933, but this information has not been confirmed. Four (Yang Ch'eng) Avro Avian copies (s/ns 70-73) were completed by the Canton factory in May 1933 for use at the flying school. When Aviation Day was celebrated in Canton on 20 September, 72 Cantonese and 12 Kwangsi aircraft took part. Taishatau was closed down in 1933 and replaced by the new aerodrome built at Shoukouling (Shekpai, Lean Dog Hill) on the north west boundary of Canton.

Canton Air Force, December 1933

By December 1933 the Canton Air Force was reported to have 17 Curtiss Hawks, 12 Vought Corsairs, 4 locally built Corsairs, 5 Douglas O-2MC-3s, 3 Wacos, 4 Armstrong Witworth AW 16s, 3 Armstrong Witworth Atlas, 3 DH 82 Tiger Moths, 7 Avro Avians, 2 Fleet trainers, 1 Arrow Sport and 2 Ryans. Six more Fleets and nine Corsairs were on order.

The Air Force consisted of six squadrons:

the 1st Squadron at Canton (Commander Tang Chou) with Yang Ch'engs and AW 16s,

the 2nd Squadron in Kiangsi (Ting Chi-hsu) with Corsair, Douglas and Waco aircraft,

the 3rd Squadron, also in Kiangsi (Tao Tso-the) with Yang Ch'eng, Ryan and Waco,

the 4th Squadron in Fukien and Kwangtung (Hsieh Mong) with Yang Ch'eng, Atlas, Douglas and other types,

the 5th Squadron in Kwangtung (Wu Chien-wen) with Yang Ch'eng, Ryan, Waco, Moth and Eagle Rock, and

the 6th Squadron in Canton (Ma Ting-huai) with Yang Ch'eng, Waco, Travel Air and Tiger Moth.

Foreign Instructors

Late in 1932 the Canton Air Force had been looking for American pilot instructors and on 8 February 1933 Stuart Baird, Edward Deeds, and Clarence Terrell had been engaged and sailed from the USA. Deeds was killed in a Curtiss Hawk accident on 1 July and was replaced by Captain Harry Claiborne[5], and one of the other instructors

[5] Claiborne was to remain with one more American instructor at Canton until 1936.

was dismissed. The Officer Commanding was still General Huang Kuang-jui (Freddy Wong). In the spring of 1934, Squadron Leader Ting Chi-hsu and Brigadier General Mei Yung-on (Lung-an), Director of the Canton Aircraft Factory, went with Huang to France and Italy to look for new aircraft and to study training establishments and factories. In addition they were to buy new manufacturing equipment for the Canton Aircraft Factory.

The British Air Attaché visited the Kwangtung Air Force on 1 May 1934 and wrote a detailed report. The Chief of Staff, General Art Lim (Lim Fuk Yun), was acting Head of the Air Force during General Huang Kuang-jui's absence in the USA and Europe. The main aerodrome at Shoukouling (Lean Dog Hill), 4 miles east of Canton, had four brick double hangars, storehouses and workshops. Garnet Malley had been hired for 2,5 years as Adviser and Flying Instructor, and there were two American bombing and army co-operation instructors. There were 12 Chinese flying instructors and approximately 200 officers and officer cadets under instruction at the flying school. Primary training was carried out on Fleet, Avian and Moth trainers at the new aerodrome near Pakwanshan (White Cloud Mountain), 3 miles north of Canton, which had one new hangar.

The approximate number of aircraft in service was: two DH 60 Gipsy Moths, four DH 82 Tiger Moths, four Avro Avians, four Armstrong Witworth AW 16s, eight Fleet trainers, two Travel Airs, nine Vought V-65 Corsairs, six Douglas O-2MC-3s, six Yang Ch'engs, six Pitcairn Mailwings, three Stearman LT-1s, three Loening Air Yachts, 12 Curtiss Hawks, one old Breguet 14 and a number of other aircraft. There were a total of about 130 aircraft in Kwangtung Province and there were plans to set up four General Purpose Squadrons and two Pursuit Squadrons, each of 15-18 aircraft. However, in his annual report for 1934 the Air Attaché estimated the number of aircraft to just 90 and only one squadron of 15 Hawks had been organised.

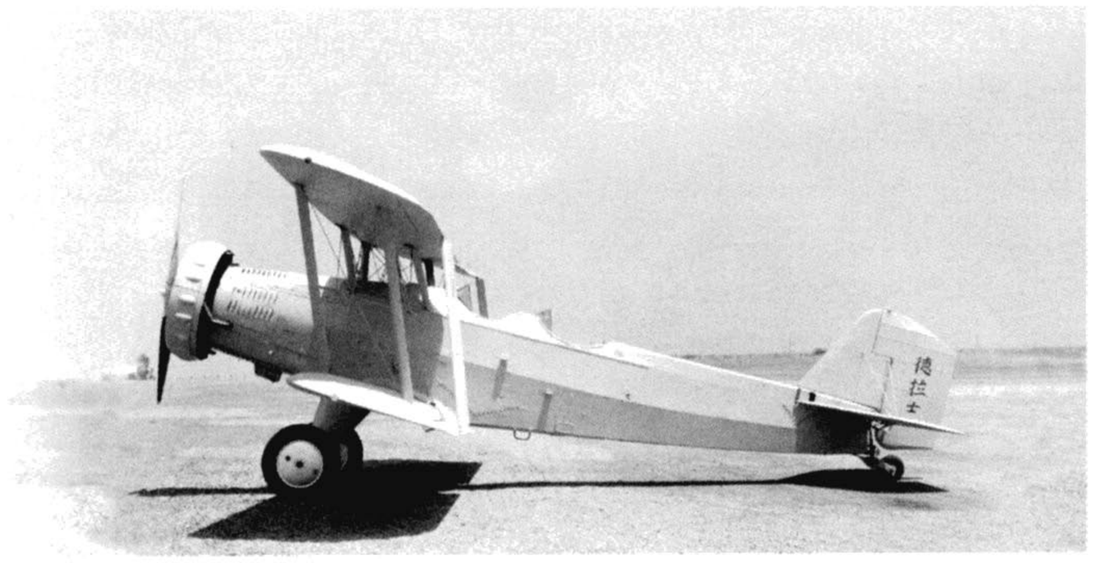
Consolidated representative Fisher had sold six two-seat Fleet 10A trainers in March 1934 and the Loening amphibians and Stearman transports mentioned in the report had been bought from American Airways. One source alleges that Chang Huei-ch'ang bought eight Pitcairn PA Mailwing airmail transports in the USA in April 1932, which were to be converted into bombers, but they were seized by the Canton Government when they arrived in Hong Kong in May 1932. In fact they were sold by American Airways only in November-December 1933, but in any case they were converted into bombers in Canton.

In March 1934 the Aircraft Factory completed Yang Ch'eng s/n 74, based on the Douglas O-2MC[6]. It was followed by Yang Ch'eng Douglas s/ns 75-78. Production of these aircraft had started in July 1933. By that time more than 20 aircraft had been designed and built at the factory since 1927, most of them light bombardment and observation, or training biplanes. One of the latest orders was for six two-seat light bombing machines, somewhat similar to but smaller than the Vought Corsair and fitted with Pratt & Whitney Wasp engines. A single-seat fighter powered by a 300 hp Wright Whirlwind had also been built. The FEACo sold a Vickers Bygrave Bombing Teacher (a type of simulator) to Canton in October 1934.

According to an American intelligence report dated 1 March 1935 a Curtiss Fledgling, a Curtiss Robin (with OX-5 engine) and a Waco F trainer were in service at Canton, but the existence of these types has not been confirmed.

[6] These aircraft were powered by the 600 hp Pratt & Whitney Hornet and were described as a cross between the Douglas and the Corsair.

Canton purchased a batch of ten Boeing 281 fighters in 1936. (Wings of China)



Douglas O2MC3 "Telashi" ("Dallas"), May 1932.

Another and more reliable US Intelligence listing of Canton Air Force aircraft dated 1 July 1935 includes 14 Fleet trainers, eight Pitcairns, seven Avians, two Tiger Moths, three Douglas O-2MCs, seven locally manufactured Douglas aircraft, nine V-65 Corsairs, four Atlases, 15 Hawks, five AW 16s, three Waco (J-5 engine), three Stearman transports and six unknown basic trainers.

German Influence

In February 1935 German General Hans Sehmsdorf arrived in Canton. He had been engaged by Ch'en Chi-t'ang as Chief Military Adviser[7] and with him came a number of German officers, some of them hired to work in the Canton Arsenal. The German presence soon started to have its influence aircraft acquisitions. Three Focke-Wulf FW 44F Stieglitz two-seat trainers were ordered immediately from F Feld & Company in March 1935 and were shipped on 4 April. In addition three Stinson model O trainer or light observation aircraft were purchased cheaply by General Huang, who had been visiting the USA until April 1934.

The FW 44 trainers were delivered and handed over on 29 June and on the following day Focke-Wulf company representative Gerd Achgelis thrilled a large crowd of spectators and foreign residents when flying stunts in one of the new aircraft over Canton. Another six FW 44Fs were ordered at the same time. They were shipped from the factory on 29 August and it was also reported that three new German trainers arrived at Tien Ho Aerodrome from Hong Kong by train on 22 October[8].

Seven Kwangsi aircraft under the command of Lieutenant-Colonel Wu Yiu-liu and over 500 officers, cadets and other personnel of the Kwangsi Air Force visited Canton in September 1935. They were to take part in an aerial display arranged at the Canton Air Force headquarters at Tien Ho in memory of General Yang Sen-yi, the "father of China's military aviation". On 24 September a new "bomber" from Tien Ho Aerodrome crashed near Shekpai aerodrome (Shoukouling) and the "3rd bomber" of the Squadron at Swatow had crashed on the day before. On 22 October Kwan Man-chun crashed a trainer on the railway line near the Tien Ho Aerodrome.

The Air Force now had five squadrons at Shoukouling, East Canton, including the one at Swatow, which had returned, and one at Chungfa. According to British intelligence notes on the Kwangtung Air Force from October 1935 the total aircraft strength of the training school was 10 Fleet Type 5s, four Avro Avians, two DH 82 Tiger Moths, six (!) Stinson Model Os and nine FW 44 Stieglitz. The service squadrons had four Armstrong Witworth AW 16s, 14 Curtiss Hawks, 12 V-65 Corsairs, seven "old type" Corsairs, six

Names and numbers of Canton aircraft

About 1933 the Canton Air Force introduced a new numbering system. Numbers below 100 were apparently reserved for aircraft used for training. For other aircraft the first digit of the number indicated the squadron it belonged to. Moth s/n 41 was a flying school machine, while Moth s/n 502 belonged to the 5th Squadron, Douglas s/n 403 to the 4th Squadron, etc. The s/n was changed when an aircraft was moved to another squadron.

Waco ATO *201, 202 "Tungkung", 203, 204, 110*
Waco CSO *2, 204, 309, 502*
Avian *10, 21, 22, 25, 27, 29, 30, 32, 33, 35, 36, 39, 40, 46-49, 306*
Yang Ch'eng *51-58, 62, 64, 70-78, 107-109, 111, 308, 312, 410, 411, 504 "Chengkung","Nanhsiung"*
Eagle Rock *112, 505, 506*
Eaglet *408*
Curtiss-Wright Travel Air *1, 3, 26*
FW 44D *77*
AW 16 *106*
Atlas *403*
Moth *41, 42, 44, 502*
Tiger Moth *5, 6*
Flamingo *212*
Stearman (?) *611-612*
Corsair *209*
Douglas O-2MC-3 *203, 403, "Te La Shih (Dallas)"*
Ryan Brougham *"Kwangchow" (Canton), "Chukiang" (Pearl River), "Hsikiang", "Hankow"*
Waco "Pan Yu", "Nam-hoi"
"Bomber" *"Shanghai"* (January 1930)
"Commercial aircraft" *"Kong Ping"* (December 1930)
Unknown type *14, 103, 112, 114, 115* (October 1928), *"Howkow", "Potey", "Canton 55", "Namhoi", "Tungkuan", "Toishan", "Chungshan", "Cheung Kiang"* (May 1930)

[7] Sehmsdorf died in China in July 1936.

[8] The South China Morning Post reported on 5 July 1935 that a batch of aircraft just being unpacked was an advance shipment of nine (!) German aircraft and that the remainder, about 200, would arrive soon. General Lam Shi-ching (Lin Shi-ching), Commander of the Canton Gendarmerie, was said to have placed the contract. Another 80 aircraft had been ordered in the USA. The Canton Aviation Bureau was to be split into separate Pursuit, Bombing and Observation Sections, each with 243 aircraft. There were to be three flotillas in each section, each made up of squadrons of 27 aircraft. The day before the same newspaper stated that 120 fighting aircraft were to be purchased from Italy and Germany.

locally-made Corsairs, nine Douglas O-2MCs (presumably including locally-built copies), four Armstrong Witworth Atlas Mk IIs, three Stearmans and two Loening Air Yachts. All the Stearmans and Loenings had been converted into bombers. Ten Boeing 281 (P-26A) single-seat fighters were on order. Malley acted as Air Adviser and there was one training school, six service squadrons and two aircraft factories (one under construction).

The Kwangtung Government finally managed to obtain an import huchao for the 10 Boeing 281 fighters in September 1935. The contract had been signed by the General Headquarters of the First Group Army Corps already in the autumn of 1934. Owing to funding difficulties and problems with the Central Government huchao the aircraft were not shipped until 16 January 1936, however.

In 1936 the Canton Air Force was organised as follows (all squadrons at Shoukouling):

1st Squadron with Corsairs
2nd Squadron with Boeing 281 and AW 16 fighters
3rd Squadron with Yang Chen's and Atlas IIs
4th Squadron with Douglas O-2MCs, Waco CSOs and Stinsons
5th Squadron with Hawk Is
6th Squadron with Hawk Is
Flying School: Yang Ch'engs, Avians, Fleets, Wacos and FW44s

Conflict With Nanking - End of Independence

By late 1935 Nanking concentrated an overwhelming military force facing Kwangtung and Kwangsi in Fukien, Kiangsi, Hunan, Kweichow and Yünnan. The Canton Government (Ch'en Chi-t'ang and Li Chi-shen) had been supported by Hu Han-min, Sun Yat-sen's old revolutionary associate, and when he died in May 1936, it was anticipated that Nanking should finally move against Canton and Kwangsi. There was an upsurge of anti-Nanking and anti-Japanese sentiment in the two provinces and their leaders started to prepare for war. As part of the political and military offensive against Nanking Ch'en Chi-t'ang accused Chiang Kai-shek of being too Japan-friendly.

In May 1936 the Kwangtung and Kwangsi forces were reorganised as the "Anti-Japanese National Salvation Army", commanded by Ch'en Chi-t'ang, Li Tsung-jen and Pai Ch'ung-hsi. On 1 June troops moved into Hunan, ostensibly on their way to fight the Japanese in North China and on 7 June 1936 Kwangsi troops crossed the Hunan border.

The campaign collapsed almost immediately, however, and many of the leaders involved defected to Nanking. On 7 July four Douglas O-2MC4s and three Boeing 281s were flown by their pilots to Nanchang and subsequently to Nanking. On 8 July, Ch'en's chief subordinate, the Commander of the 1st Kwangtung Army, General Yü Han-mou, went over to Nanking and on 18 July a most extraordinary incident occurred.

Led by Air Force Chief Huang Kuang-jui, a total of 136 Canton aviators defected to Nanking. They had never gone to sleep on the night before and slipped out of their barracks at 3 a m on Saturday morning the 18th, and shortly before dawn 72 aircraft took off from Shekpai (Shoukouling). Captain Hu Sum-chun and another officer were killed when their aircraft crashed on take off. Most of the aircraft headed for Shiukwan, but the eight highest officers went to Hong Kong instead. All pilots had deserted and not a single machine in good condition was left at Canton!

Four aircraft, a Boeing, a FW 44 Stieglitz and two Fleet trainers, landed at Kai Tak, Hong Kong, and it was noticed that one had its national insignia obliterated by silver grey paint. A fifth aircraft had made a forced landing and was brought to Kai Tak by lorry. Two aircraft crashed when landing at Shiukwan. Forty-five of the 58 aircraft that had reached Shiukwan flew to Nanchang on 20 July to be reviewed by Chiang Kai-shek and a meeting to welcome the Canton airmen was held on the following day. The remaining 13 aircraft were to stay at Shiukwan in case they would be needed during the advance towards Canton. About 200 air cadets and officers of the Canton Aviation School and Air Force went to Hong Kong, but returned to Canton after about a week.

Yü Han-mou (See above) was made new Commander of the Kwangtung Army by Chiang. He occupied Shiukwan. Shortly after the desertion of the Air Force became known on 18 July Ch'en Chi-t'ang decided to retire and left for Hong Kong on board gunboat "Haihu". The South-West Political Council and South-West Executive Committee ceased functioning. Several Nanking aircraft flew over Canton to drop pamphlets. Kwangsi Commander-in-Chief, General Li Tsung-jen, departed from Canton on South-Western Aviation Company's Stinson "Kai Ming", and the Kwangsi troops retreated back to Wuchow from Kwangtung.

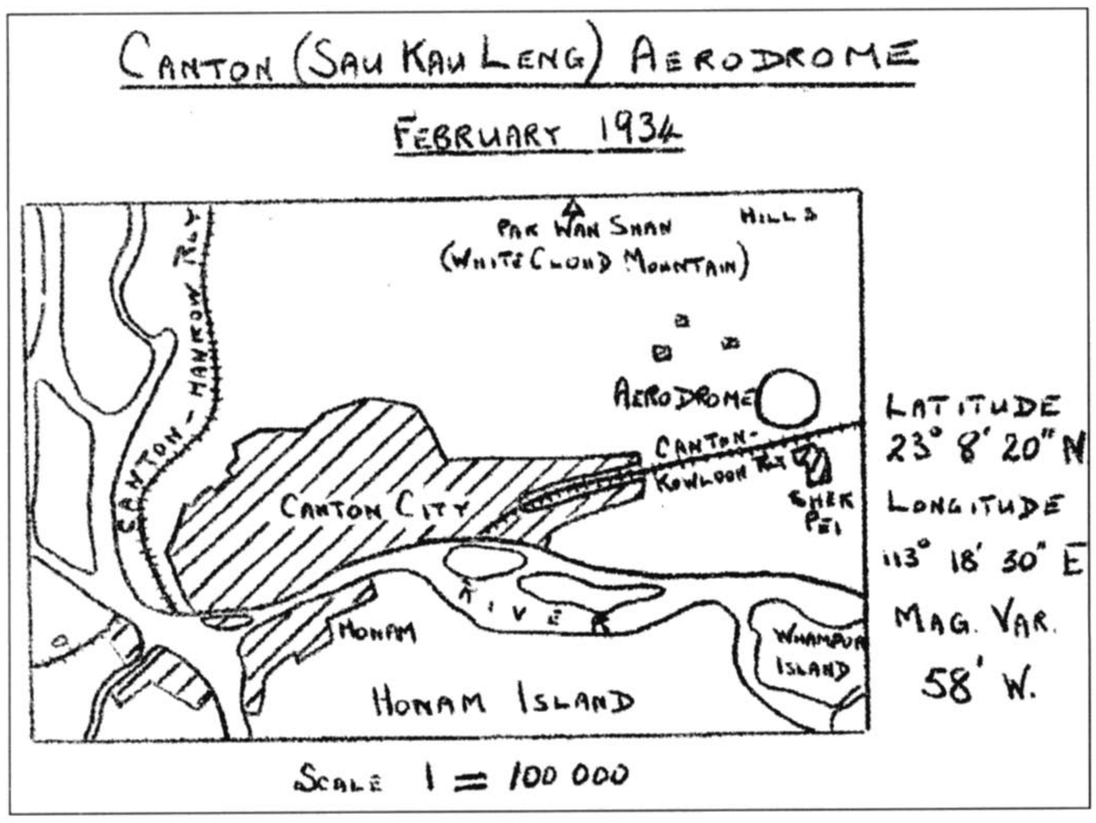
Nanking troops arrived in Canton on 20 July. Chiang Kai-shek appointed General Huang Mu-sung new Governor and this ended Kwangtung independence for good. The Kwangtung Army became the 5th Route Army of the National forces. A new Kwangtung Provincial Government headed by General Huang was sworn in on 19 August[9].

The Final Fate of the Canton Air Force

At the beginning of July 1935 the Kwangtung Government had placed an order in France for the supply of 20 Dewoitine D.500 single-seat fighter monoplanes, to be delivered in September and November 1935, but the order was not accepted because the factory was unable to deliver in time. In 1935 Canton probably bought Aircraft (China)'s demonstration Fairey Fox IV and two second-hand examples of the Northrop 4A Alpha, a single-seat mail transport monoplane, were purchased in the USA in July 1935 through Hong Kong aircraft broker James W Fisher.

Orders had been placed in September 1935 with F Feld & Company, represented by T Janssen, for a number of

[9] General Huang Mu-song died in April 1937 and was replaced by General Wu Te-chen.



German aircraft. Six Heinkel He 111A twin-engine bombers arrived in August 1936, after the Nanking Government take-over of the Canton Air Force, and were stored for the time being. Seven German pilots and two mechanics accompanied them and a consignment of 50 machine guns for these aircraft arrived on 31 August. One Focke-Wulf FW 58 Weihe was shipped from Germany on 16 November. The Nanking Commission of Aeronautical Affairs demanded the release of these aircraft to them and the first four He 111s were handed over late in October, the remaining two following at the end of November. Ten Focke-Wulf FW 44F and J trainers arrived about July 1936.

An order for 12 Heinkel He 66 dive-bombers was apparently placed. Some publications maintain that 12 He 66s were delivered to China in July 1934. Now evidence has been found to support this, however, and the He 50, on which the He 66 was based, did in fact not go into production until in 1935[10].

On 17 July 1936 the newspapers had reported that a 7th (Commander Ho King-wei) and 8th (Commander Kwok Hon-ting) Squadron was to be organised with the new aircraft arriving from abroad. Large numbers of new aircraft had allegedly been landed in Canton on the day before and were being assembled. This was probably just propaganda aimed to impress Nanking. It might have been planned to set up new squadrons, but it seems that no aircraft were added to the Canton Air Force during this period. As far as known, only two aircraft were received. One was a Douglas DC-2 passenger transport purchased on 28 May, probably for Ch'en's personal use, and the other was an aircraft called Fu-hsing, a new type designed by Constantine L Zakhartchenko and built at Shiukwan.

The Fu-hsing two-seat trainer prototype was completed and test flown in May 1936. A contract had been made in April 1934 with Curtiss-Wright, who were to erect a new factory. The Shiuchow Aircraft Works became operational in August 1935 and was opened officially on 1 December 1935 and in April 1935 materials for a batch of 20 aircraft had been ordered.

The Canton Government had placed contracts for large numbers of aircraft in the USA as well. In order to assemble and deliver 30 Curtiss Hawk III single-seat fighters and 30 Vultee V-11 single-engine bombers, Inter-Continent took over the Shiuchow Aircraft Works. The aircraft had been ordered in April 1936 and parts and material sufficient for the assembly of 30 Hawk IIIs started arriving late in June 1936, but on 16-28 June Shiuchow was flooded and this slowed down operations. On 1 July orders were received to evacuate all personnel, equipment and materiel to Canton because of the political tension between Nanking and Canton. By the 11th everything had been loaded on boats.

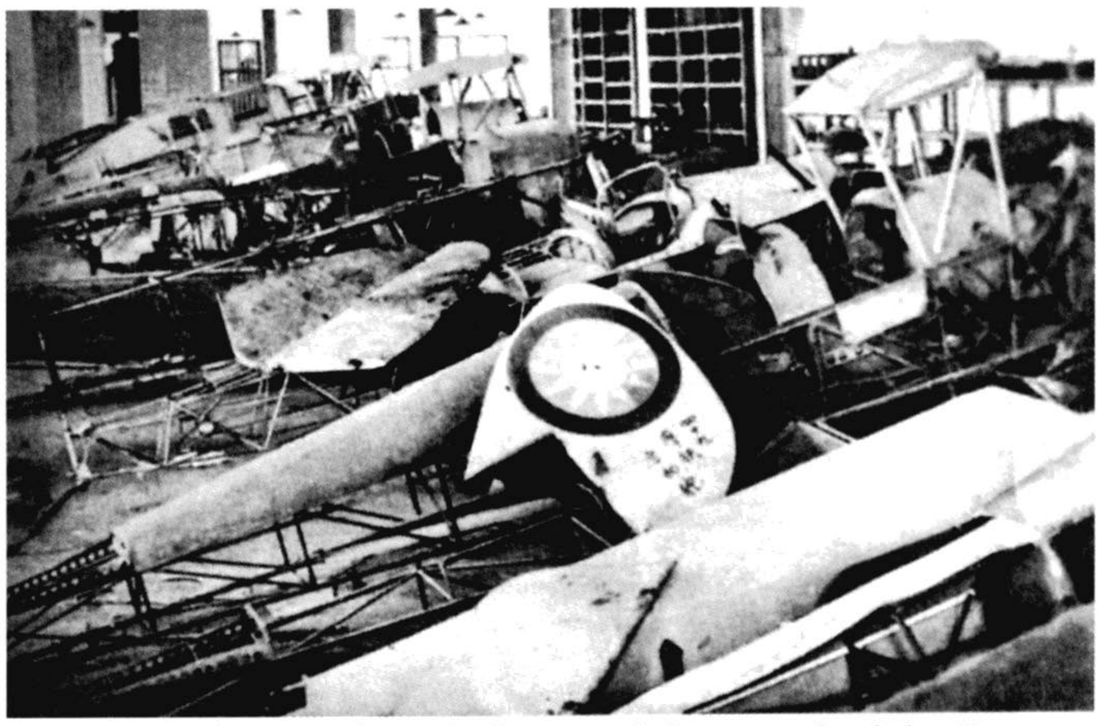
After Ch'en's surrender, Shiuchow started operations again in September. One V-11-A was completed in the USA in December 1936, and the parts for 29 V-11-Gs were shipped between July 1937 and April 1938.

On 17 August 1936 over 1,100 Canton air students and minor Air Force officers under the command of Cheung Tse-shuen left by steamer for Nanking. They were on their way to attend a short term advanced class at the Central Aviation School at Hangchow. Some of the officers had participated in the desertion in July. Former Canton Air Commander Huang Kuang-jui had been appointed principal of the school.

The reorganised Canton air units were placed under the command of General Chen Hing-wan, who was appointed "Commander-in-Chief of the 1st Route National Aviation Service" by the Central Government in August. On 22 December the 3rd Squadron with some 24 aircraft flew to Loyang, which left only 9 aircraft at Shoukouling. Air Adviser Garnet Malley left Canton and joined the Nanking Commission of Aeronautical Affairs in November 1936.

In February 1937 Chen Hing-wan was made member of the National Aviation Board. Lam Fuk-yuen was to have relieved him as Commander-in-Chief, but the Central Government instead dispensed with this position. Lam became "Chief of the Main Aviation Station for Kwangtung".

The take-over of the Canton Air Force in July-August



Apparently this was the end of some of the aircraft of the Canton Air Force. The remains of the Canton DH 82 Tiger Moths photograophwed in 1938. Rudder from aircraft no. 49.

[0] Some publications allege that second-hand He 50Bs were delivered, arriving in China in January 1936, but no evidence has been found that supports this information either.

Aircraft used by the Canton Air Force from 1927			
Type	**Quantity**	**Year**	
Curtiss JN-4 Jenny	4	1927	From first Canton Air Force
R-1 (DH.9A)	1	1927	From first Canton Air Force
French type	1	1927	From first Canton Air Force
Junkers F 13	1	1927	From first Canton Air Force
Breguet 14 and 14Tbis	11	1928	
Hanriot HD 14	4	1928	
Morane Saulnier (MS 35)	1	1928	
Caudron (C 59)	1	1928	
Ryan B-1 Brougham	2	1928	
Yang Cheng	>25	1928	Built locally. Several types/versions
Avro Avian	(25)	1929	Including 3 ex-Fukien in 1934
Waco 220 (ATO) Taperwing	5	1929	
Junkers K 53	1	1929	
Klemm L 25 Ia	1-2	1930	Ex-Amoy Commercial Aviation School
Alexander Eagle Rock A-2	2	1930	Ex-Amoy Commercial Aviation School
Raab-Katzenstein*	1-2	1930	Ex-Amoy Commercial Aviation School
Waco CSO Straightwing	6	1931	
Armstrong Witworth AW 16	9	1931	
Ryan B-5 Brougham	5	1931	
Fleet 2	1	1931	
Vought Corsair	(21)	1931	Some were ex-Nanking
Lockheed Vega	8		Not delivered 1931
Junkers K 47	3		Seized by Nanking 1931
Fokker	9		Not delivered 1932
BFW U 12 Flamingo	>1		Taken on charge before 1933
American Eagle Eaglet	>1	(1932)	
Douglas O-2MC3	5	1932	
Fleet 5	2	1932	
Armstrong Witworth Atlas II	9	1932	
DH 60M Moth	6	1932	
DH 82 Tiger Moth	4	1932	
Arrow Sport	1	1932/33	
Curtiss-Wright Travel Air	4	1933	
Curtiss Hawk I	18	1933	
Stearman LT-1	3	1933	Initially intended for SWAC
Loening C-2C Air Yacht	3	1933	Initially intended for SWAC
Pitcairn PA-6 Mailwing	8	1934	
Fleet 10A (US Model 5)	6	1934	
Stinson Model O	3	1934	
Fairey Fox IV	1	1935	
Northrop 4A Alpha	2	1935	
Focke-Wulf FW 44F Stieglitz	9	1935	
Dewoitine D.500	20		Ordered 1935, but order not accepted
Boeing 281	10	1936	
Douglas DC-2	1	1936	
Fu-hsing	1	1936	Built locally. Others built and delivered to CNAF
Curtiss Hawk III	41		Delivered to CNAF
Vultee V-11-G	30		Delivered to CNAF
Heinkel He 111A	6		Delivered to CNAF
Focke-Wulf FW 44F/J Stieglitz	10		Delivered to CNAF
Focke-Wulf FW 58 Weihe	1		Delivered to CNAF

* Kl I Schwalbe and/or RK 9 Gramücke

1936 added a large number of aircraft, including several new types, to the CAF aircraft inventory: the Armstrong-Witworth Atlas, Arrow Sport, Avro Avian, Boeing 281, Curtiss Hawk I and III, Douglas DC-2 and O-2MC, Fleet, Focke-Wulf FW 44 and FW 58, Fu-hsing AP-1, Heinkel He 111, Northrop Alpha, Pitcairn Mailwing, Ryan Brougham, Stearman, Stinson Model O, Travel Air, Vought Corsair and Waco CSO.

Chekiang (Shanghai)

The Schoettler B I was built at Lunghua, Shanghai, in 1923.

General Lu Yung-hsiang reigned Chekiang province and in addition he controlled Shanghai since 1917 with its arsenal and extensive revenues from foreign trade. Shanghai was part of Kiangsu, but Lu refused to return the city to that province, which almost resulted in the outbreak of war in 1923. He had from time to time maintained alliances with both Sun Yat-sen and Chang Tso-lin, but ruled his province as a warlord. In 1922 he had his headquarters at Hangchow in the northern part of Chekiang.

An aerodrome was established in 1922 on the parade ground of the troops stationed at Lunghua, 7 miles south-west of Shanghai on the Shanghai-Hangchow railway. By September one hangar had been completed and six others were in course of construction. There was one aircraft, an Avro 504K trainer, which had been bought by a German, Leopold Schoettler, from its original owner and apparently sold to General Lu[1]. British Major W E B Holland[2], who visited the aerodrome, was engaged to fly the Avro to Kashing and back to drop a message on 27 August. There were probably no Chinese pilots.

In August 1922 Lu tried to take over six Curtiss JN-4 Jenny trainers imported by the American James Selvin. They had been ordered by the Yen-Fu-Ch'uan Motor Car Company at Foochow for Fukien warlord Li Hou-chi, but were detained by Shanghai customs and later sold elsewhere.

In February 1923 there were four hangars at Lunghua aerodrome. The Avro had been joined by an Armstrong Witworth FK.8, which had been imported a few years earlier by W McBain, Shanghai, and flown by him. It had crashed, however, and had been rebuilt at Lunghua. It is not entirely clear if the Avro and Armstrong Witworth were privately owned aircraft or if they had been sold to General Lu.

Lu had apparently managed to order a number of German aircraft but the source is not known. The deal was said to cover 16 aircraft, which were expected from Germany in September 1922 and included "six Albatros two-seaters and two Pfalz"[3]. They were discharged from a steamer and landed at Wusung Wharf, Shanghai, and then transported to "beyond the International Settlement" sometime before 15 November. Major Holland reported in February 1923 that the 16 complete German machines had arrived some months earlier. Four "modern Albatros Scouts" of post-

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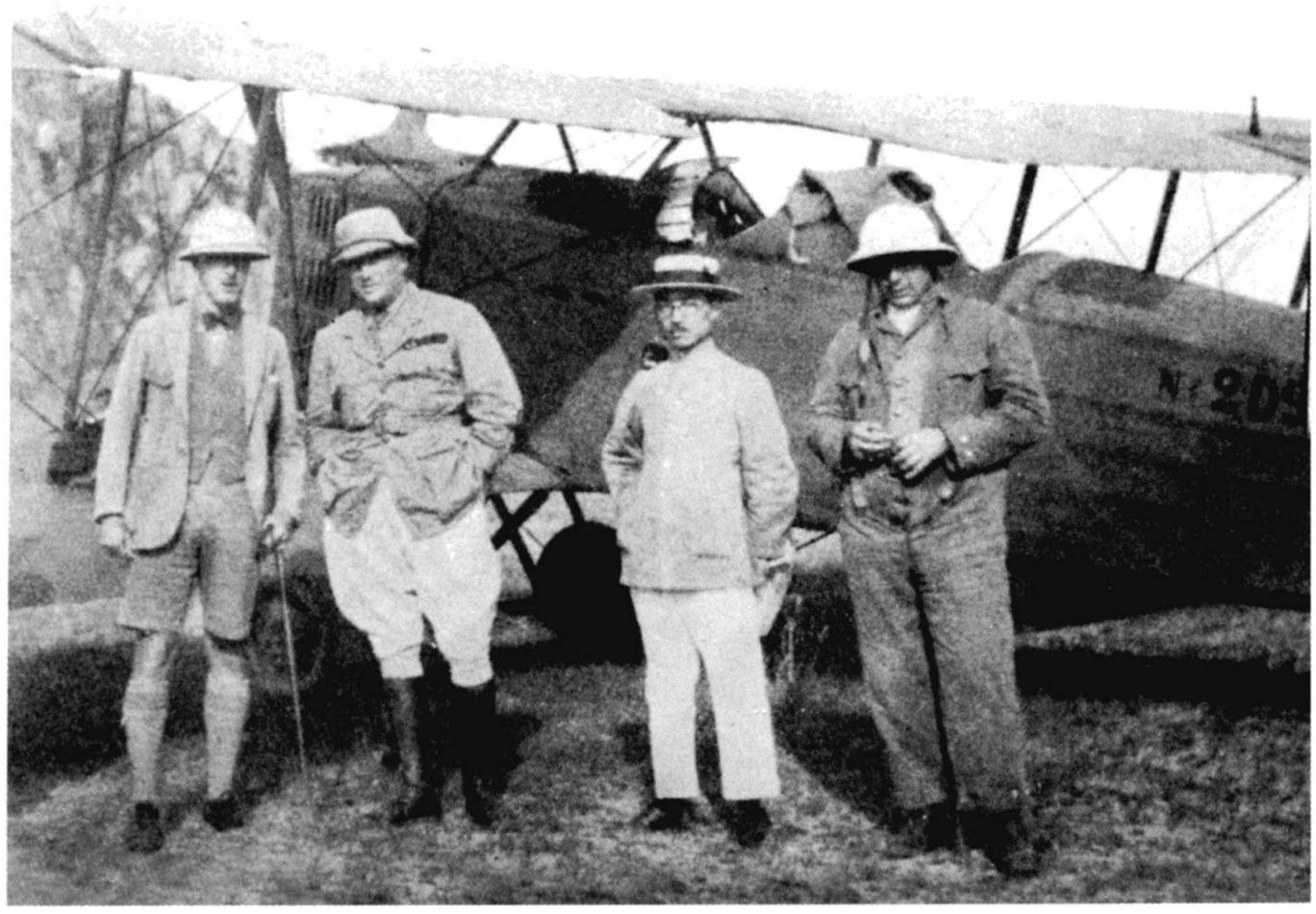
[1] This aircraft had been purchased in July 1920 via Probst, Hanbury & Company, London. Although called an Avro 504K, it was a three-seater with 80 hp Renault engine, which would in fact have made it an Avro 548. It was imported from England by the Central Garage Company in 1920, but was detained by Shanghai customs. It was handed over to China Motors Ltd, Shanghai, who also failed to get clearance, and then sold to Schoettler.

[2] At the time Holland was in the employ of the Vacuum Oil Company.

[3] Also described as "16 Albatros, LVG two-seaters and Pfalz aeroplanes".



This Breguet 14 was sold or given to French pilot d'Oisy, who had crashed his own aircraft, Breguet 19A2 "Jacqueline", at Shanghai on 20 May 1924

war design and powered by 260 hp Mercedes engines were erected, but the remainder was not unpacked. Major Holland flew one of the Albatros aircraft.

All German aircraft then disappeared mysteriously from Lunghua! Holland guessed that they had possibly been taken to Mukden. This is indeed one of several mysteries in Chinese aviation history. Why would the aircraft be sent away? They were not reported to have turned up neither at Mukden, nor anywhere else, so where do they go? Post-war Albatros production is not known in detail and could well have included a few examples of the type mentioned above.

General Lu had contacted Buchheister & Co in 1922 and asked them to build an aircraft factory at Lunghua. A concrete hangar with workshops was set up and the Germans Ferdinand Leopold Schoettler and Ernst Fuetterer were put in charge of construction with Chinese carpenters and fitters. Six German engines were imported for the needs of the factory: two 250 hp Benz and two each of the 160 hp and 260 hp Mercedes. It is most likely that these engines were in some way connected with the German aircraft "mystery".

Major Holland reported that construction of six two-seat aircraft had started[4]. The first, the Schoettler B I powered by a 160 hp Mercedes, was more or less completed in February 1923, but was not flown until in August when Major Holland made the first flight. No proper aviation spirit was available and owing to the grade of petrol used engine trouble developed. The flight ended with a forced landing, the undercarriage was damaged and the pilot injured. Lu's acquisition of a batch of French aircraft, which is described later, put an end to the experiment with self-sufficiency and work in the factory was suspended. Schoettler left for Shansi in 1924 and took up his work there. The original engine contract had apparently been for 100 Mercedes 160 hp engines, of which only 78 were actually delivered and it seems that Fuetterer was the one responsible for the engine deliveries. Most of these engines were used in motorboats and cars.

Chinese warship "Chao Wu" arrived in Shanghai on 21 November 1923 with a consignment of aircraft for Lu Yung-hsiang. They had been purchased from the French firm Chapeaux Frères in Shanghai, and shipped to French Indochina on the "Mehoil Chief Engineer" and from there to Haimen on the "Hwa Kung". They were then transferred to the "Chao Wu" in order to avoid customs.

It was first reported that seven of the aircraft had been transferred to Lunghua, but that the total might consist of eight big and two small aircraft. An armoured car was also included. A later report mentions eight Breguets, probably fitted with machine guns and bomb racks. With the aircraft arrived a Chinese pilot, Lieutenant Chu Pin-hau (alias Etienne Tsu, a former French Air Force pilot), and Dr Tartois, a representative of Chapeau Frères. Chu had gone to France in May 1923 to buy aircraft.

When an American intelligence officer visited Lunghua in January 1924 he saw a Morane-Saulnier two-seat monoplane scout with 120 hp Le Rhone engine. He reported that the other aircraft had 80 hp Anzani and 300 hp Renault engines, but did not mention any types. At that time General Ho Feng-ling was holding the post of Station Commandant. The large aerodrome at Hungjao was entirely deserted.

British Squadron Leader Gordon visited Lunghua on 15 March 1924. He saw an armed Breguet 14 being assembled under the supervision of Lieutenant Chu, the only pilot present, and tested the same day. He also saw the Avro, the Schoettler and four more unassembled Breguets in cases. He writes that at least one Breguet was a single-seater(!) and that four or five Morane Saulniers had also been delivered in the autumn. Lieutenant Chu had flown one of the Morane-Saulniers on 16 February. In addition a total of 26 Breguets had been ordered, of which 24 had already been delivered via Shanghai. This batch was to include six of the six-seat limousine version and some "single-seat fighters". He heard that there were seven Breguets at an aerodrome in the vicinity of Hangchow, which he thought might have come either from Shanghai or from Mukden.

The reports about these aircraft are confusing, but the most reliable information is probably found in French journal "L'Aeronautique", which reported that Lu Yung-hsiang had in fact acquired six Breguet 14s, two Morane trainers and two Morane "rouleurs" (taxi trainers), and these numbers were repeated in Jane's All the World's Aircraft for 1926.

[4] An American intelligence report dated 16.1.24 stated that seven two-seat and one single-seat aircraft were in various stages of completion, and that Schoettler also intended to build a six-passenger type and later a twin-engine 12-passenger type.

While on his way to Japan, French pilot Pelletier d'Oisy crashed his aircraft, Breguet 19A2 "Jacqueline", at Shanghai on 20 May 1924. He purchased, borrowed or was given one of Lu's Breguet 14s to be able to continue, left for Peking on 29 May and finally arrived in Tokyo on 9 June.

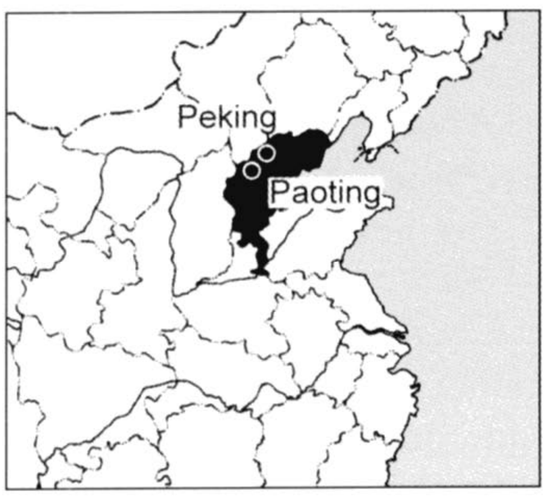
Chekiang came under threat by its neighbours in 1924 and by August ex-Tuchun of Fukien Sun Ch'uan-fang was moving his forces to the border of Chekiang. His ally Ch'i Hsieh-yuan, the warlord of Kiangsu, with headquarters in Nanking, started to mobilise his army on 15 August 1924 and on 3 September war broke out along the Nanking-Shanghai railway. General Yang Yi-lai of Kiangsi soon joined in the attack. Lu was forced to evacuate Hangchow and left for Shanghai. Sun then attacked Sungkiang, which fell on 9 October. Lu fled to Japan on 13 October and the Chekiang army then surrendered and was absorbed by Sun's and Ch'i's forces.

According to the last report on Lu Yung-hsiang's air force it consisted of eight Breguets, including two "five-seaters", and two "Morane fighting planes", "all new". The Breguets had bomb racks and Lewis machine guns and there were large stocks of bombs, mainly of local manufacture. A few Russian pilots brought down from Mukden had been a disappointment and had been sent back, which left only Lieutenant Chu and three Cantonese pilots trained in Saigon to fly the aircraft.

Aircraft used in Chekiang (Shanghai)

Type	Qty	Year	
Avro 504K	1	1922	(Owned privately?)
Armstrong Witworth FK.8	1	1922	(Owned privately?)
Albatros	>6	1922	Not used
Pfalz	>2	1922	Not used
LVG		1922	Not used
Schoettler B I	1	1923	Built locally
Breguet 14A2 (and 14T)	6-8	1923	
Morane MS 35 (?)	2	1923	
Morane Rouleur	2	1923	Taxi trainer

Chihli (Paoting)



In 1920 the Anhwei military forces under Tuan Ch'i-jui controlled Peking and the northern part of Chihli province. Ts'ao K'un's and the Chihli clique's power base was the provinces Hupei, Kiangsi and Kiangsu. They also controlled Honan and southern part of Chihli, including Paoting, where Ts'ao had his headquarters. Paoting was strategically situated, on the Peking-Hankow railway line about 150 km south of Peking.

Allied with Chang Tso-lin in Manchuria, Ts'ao declared war against Tuan Ch'i-jui and the Anhwei in July 1920. This was the start of the so-called An-Chih War. Chihli forces concentrated at Paoting and attacked Peking from the south, while the Fengtien (Manchurian) troops marched from the east. On 19 July Tuan resigned and the victors entered Peking and much of the military equipment found there was taken away as war booty.

Relations between former allies Chang Tso-lin and Wu P'ei-fu/Ts'ao K'un deteriorated after the war. Ts'ao maintained a personal army of about 10,000 men at Paoting. He had taken three of the six twin-engined Handley Page O/7s that were in Peking and brought them to Paoting. The Paoting Air Corps was formed on 1 November 1921, apparently with no other aircraft than the big Handley Pages, which could be used as makeshift bombers. It is uncertain, however, to what extent they were flown during this period. Au Ching-wen was appointed head of the air corps.

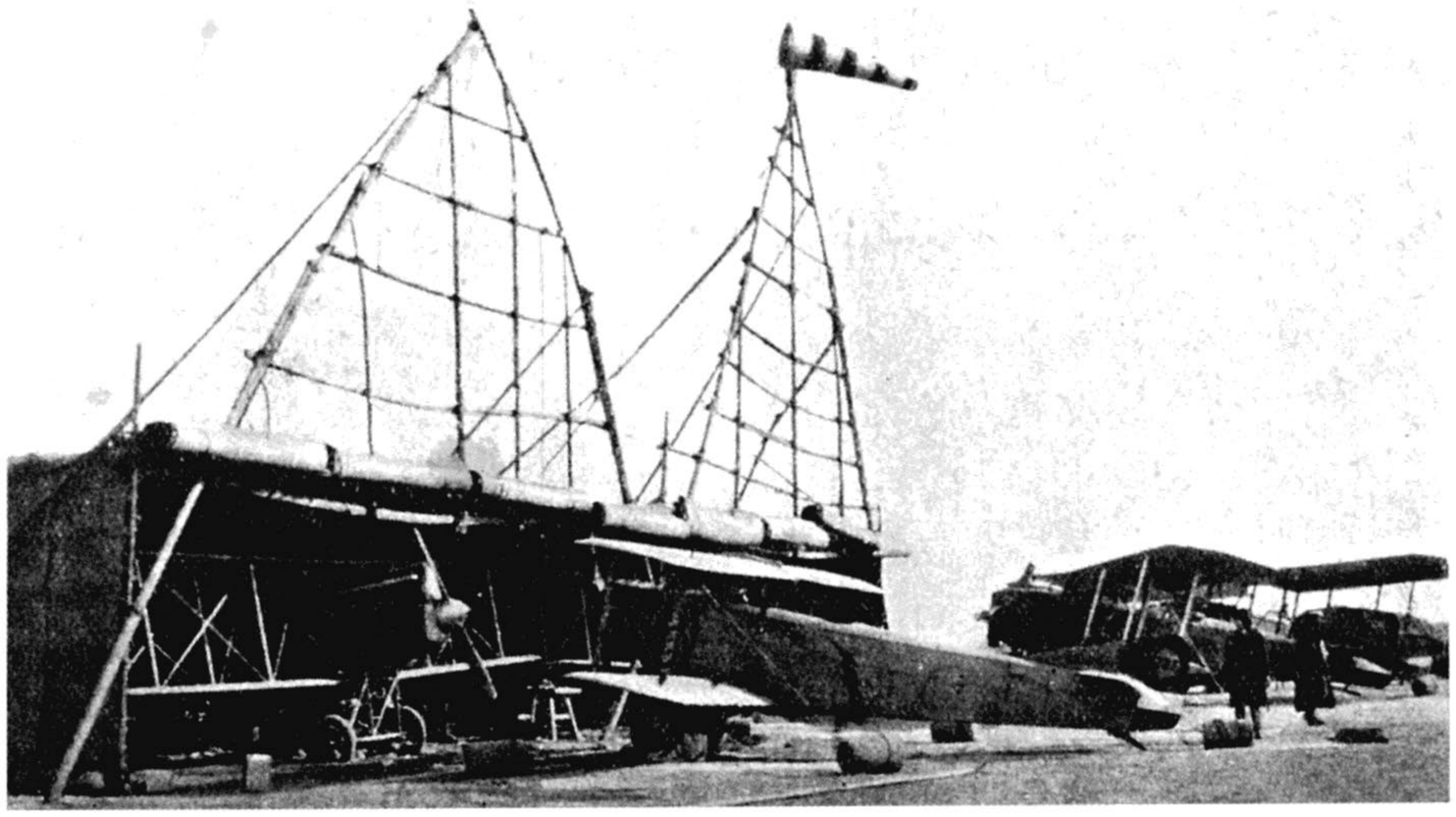
The alliance between Ts'ao and Chang Tso-lin was replaced by open hostility in 1922. In March Chang began to move his forces into Chihli and Wu mobilised the Chihli forces. Fighting started on 28 April, when Wu moved north against Peking (the so-called First Chih-Feng War). Chang's troops, which had occupied Peking in April, retreated from the city on 4 May and returned to Mukden. Aircraft were apparently not used for observation during the short war, but a few bombs were dropped by both sides.

In March 1922 disaster had struck the small Paoting Air Corps. A recently assembled Handley Page bomber caught fire while in flight and crashed at Paoting. All of the 14 or 15 passengers, mostly officers on reconnaissance instruction, were all killed. The pilot, Lieutenant Ma Yu-fang, was mortally injured. After this another Handley Page was put in service as a bomber and the third was used as a source for spares.

After the end of the Chih-Feng war Nanyüan and Peking was again looted of useable equipment. Wu P'ei-fu requested four Vickers Vimy transports (or bombers), four Vickers VIMs and six Avro 504K trainers for what was now called the Paoting Aeronautical Bureau. With the exception of the four Vimys this was approved. On 8 May pilots from Paoting crashed two Avros at Nanyüan, but on the 15th the four VIMs and six Avros were sent by rail to Tientsin, where it was planned to set up an aviation centre, but on 20 May all aircraft were sent from there to Paoting. Four Vimys and a large number of VIMs were later added to the aircraft inventory at Paoting[1].

In May 1922 James Selvin of the Curtiss Aeroplane and

[1] According to an American intelligence report dated 26.8.1922 there were seven Avros (one with Le Rhone engine and six with Monosaupape), four VIMs and five Vimys at Paoting.



The Ansaldo A.300-4 inside the hangar to the left was acquired by Chihli, but was taken over by the Manchurian Air Force. The other aircraft are Breguet 14s and a Caudron C 59.

Motor Corporation sold six Curtiss JN-4D2 Jenny trainers to the warlord of Fukien, Li Hou-chi, but when the aircraft arrived they were detained by Shanghai customs. About 12 November Selvin applied in Peking for authority to change the destination to Hankow and this was approved. The intention was to sell the aircraft to Wu P'ei-fu. On 3 December the American ship "Tseangtah II" arrived in Hankow with the aircraft on board, but the US Navy Admiral there immediately seized them. The affair ended up in the US Court in Shanghai and in February Selvin was found not guilty of shipping contraband.

By April 1923 the aircraft were at Paoting. One had been erected and test-flown and the others were still crated. At about the same time Selvin signed a contract in Peking for another 24 Curtiss aircraft for what was called the Great China Airways Company. The order included eight Curtiss JN-4D2s with Curtiss OX-5 engines, eight three-seat Curtiss aircraft with Curtiss K-6 engines (probably the Oriole), eight Curtiss transports for 2 pilots and 6 passengers, and four aerial cameras. The order was to be delivered within five months after deposit. In reality the Great China Airways Company was a front for the Paoting Air Corps. In any case, the aircraft were never delivered.

In September 1922 it was reported that Ts'ao K'un had bought ten French aircraft from a Frenchman in Shanghai. Four of them had been in Shanghai for a long time and were unserviceable, so they were delivered for free. All aircraft were shipped north and passed through Fengtai, just south of Peking, on their way to Ch'ingho at the beginning of the month. However, it has not been possible to confirm this information and no French aircraft appear in other reports either on aviation at Paoting or at Ch'ingho.

Early in April 1923 there was a single brick hangar at the Paoting military aerodrome, which was situated 2 miles southeast of the southeast corner of the city, and others were being constructed[2]. The pilots and mechanics present had received their training in Peking. There were two Handley Pages, 23 Vickers VIMs, three Vimys and six Avros, which had all been taken from Peking, and the six Curtiss JN-4 Jennies sold by Selvin. A Nieuport single-seat fighter with 110 hp Le Rhone engine[3] had been built at Paoting and was at Nanyüan for testing. The American pilot Northridge was detailed to fly it, but declined to do so as he thought it unsafe. It was then flown by a Japanese pilot and was probably returned to Paoting afterwards. The builder of the aircraft was a Chinese aeronautical engineer who had trained for eight years in Japan.

British Squadron Leader Gordon wrote in his report "Aviation in China", dated April 1924, that Wu Pe'i-fu had been allowed to take from Peking for his Military Air Service eight Vimys, 27 VIMs and several Avros. In addition to the aircraft at Paoting mentioned above, there were two Vimys and one VIM at Loyang in Honan, and two Vimys, two VIMs and two Avros in Nanking. An American intelligence report dated 16 January 1924 was more specific on Loyang aerodrome. The airfield, an extension of the large infantry drill grounds, was an adjunct to Wu P'ei-fu's personal military establishment, located at the large garrison about 3 miles west of the city. There were no permanent hangars. A large matshed covered two Vickers Vimys, which were the only aircraft set up. There were several pilots and a few students receiving rudimentary training. A total of 14 Avros were in a storehouse, still crated and more were on their way from Peking (This number probably included both the Avros and the VIMs). A Marconi wireless station with two masts alongside the airfield was under construction.

In 1923 Ts'ao K'un had been "elected" president of China by devious means. Chang Tso-lin was rebuilding his power and declared the independence of the three north-eastern provinces (Manchuria) and in October 1924 the Second Chih-Feng War erupted. Feng Yü-hsian, who was then one of Wu P'ei-fu's commanders, suddenly marched his army to Peking, seized the city and forced Ts'ao to dismiss Wu from all his military positions. On 15 November a provisional government with Tuan Ch'i-jui as chief executive was created by Feng and Chang.

About August 1924 Wu P'ei-fu had placed an order for 17 Italian "fighting aircraft", to be delivered within two months and in October two Ansaldo A.300-4 reconnaissance and bombing aircraft were shipped by Carlo Pestalozza of C:a Asiatica Importazioni ed Esportazioni from Genoa. Their destination was Tientsin and another four of the same type were sent on the SS "Pfalz" on 5 November. The second consignment was seized by the British authorities at Colombo, Ceylon, on 1 December, however.

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[2] By 1925 there were four brick hangars with corrugated iron roofs.

[3] The "Nieuport fighter" was reportedly based on the Nieuport NiD 29C1, but this has not been confirmed.

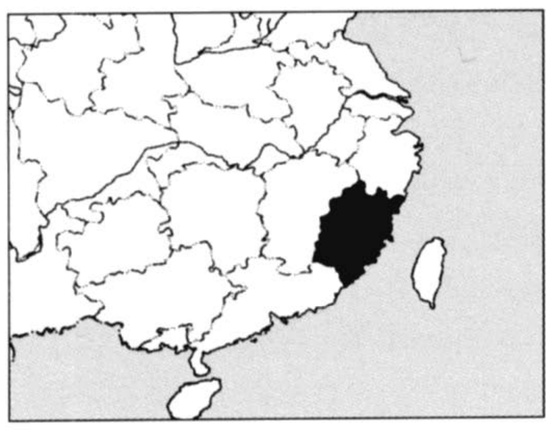
The Italian Foreign Ministry immediately insisted on the release of the aircraft and this eventually happened, but on the condition that they had to be shipped back to Italy. They were released to Freudenberg & Co and left for Italy on 23 April 1925 on board the SS "Trier".

The two Ansaldo aircraft arrived only after the end of the Chih-Feng War and were taken over by Chang Tso-lin. There is a photo of an A.300-4 in Manchurian service about 1926. The other four probably never reached China. Most of the other aircraft of the Chihli air force were moved to Loyang by Wu P'ei-fu or Feng Yü-hsiang. A total of 24 VIMs, 11 Avros, eight Vimys, six Curtiss JN-4s, two Handley Pages and one Nieuport scout were reported to still be there by September 1925 (See under Honan!). In August 1927 a Vickers Vimy was brought from Paoting to Tsinan for the Shantung Air Force.

Aircraft used at Paoting

Type	Qty	Year	
Handley Page O/7	3	1920	Taken from Peking
Avro 504K	6-11	1922	Taken from Peking
Vickers Vimy	8	1922	Taken from Peking
Vickers VIM	24-27	1922	Taken from Peking
Curtiss JN-4D2 Jenny	6	1923	
Curtiss JN-4D2 Jenny	8		Not delivered 1923
Curtiss (Oriole)	8		Not delivered 1923
Curtiss transport	8		Not delivered 1923
Nieuport single-seat fighter	1	1923	Built locally
Ansaldo A.300-4			2 taken by Manchuria in 1924 and 4 others never delivered

Fukien



Li Hou-chi, Fukien military governor and warlord, purchased six Curtiss JN-4D2 Jenny trainers from James Selvin of the Curtiss Aeroplane and Motor Corporation in May 1922. Selvin and his companion Lin Ching-chin (Lim King-jin) of Amoy visited Fuchow to meet the Governor and get the contract signed. Li, who had his headquarters at Fuchow, was an Anhwei faction ally from 1920. The aircraft, which had been bought in the name of the Yen-Fu-Ch'uan (Fuchow) Motor Car Company, arrived in Fuchow in August 1922, but were quickly conveyed to Shanghai because of unstable political conditions.

Chekiang warlord Lu Yung-hsiang tried to outbid Li and take over the aircraft. They were detained Shanghai customs customs, however, and were finally moved to Hankow by Selvin and sold elsewhere. Li had telegraphed Peking in vain for an import permit. The Motor Car Company was then commissioned to buy six aircraft in England, but nothing came out of this either and Li Hou-chi apparently never got any aircraft. In 1923 he was trying to ally himself with Wu P'ei-fu, but on 12 October Wang Yung-ch'üan, Fukien garrison commander, took Fuchow and ousted Li with the help of Kwangtung troops.

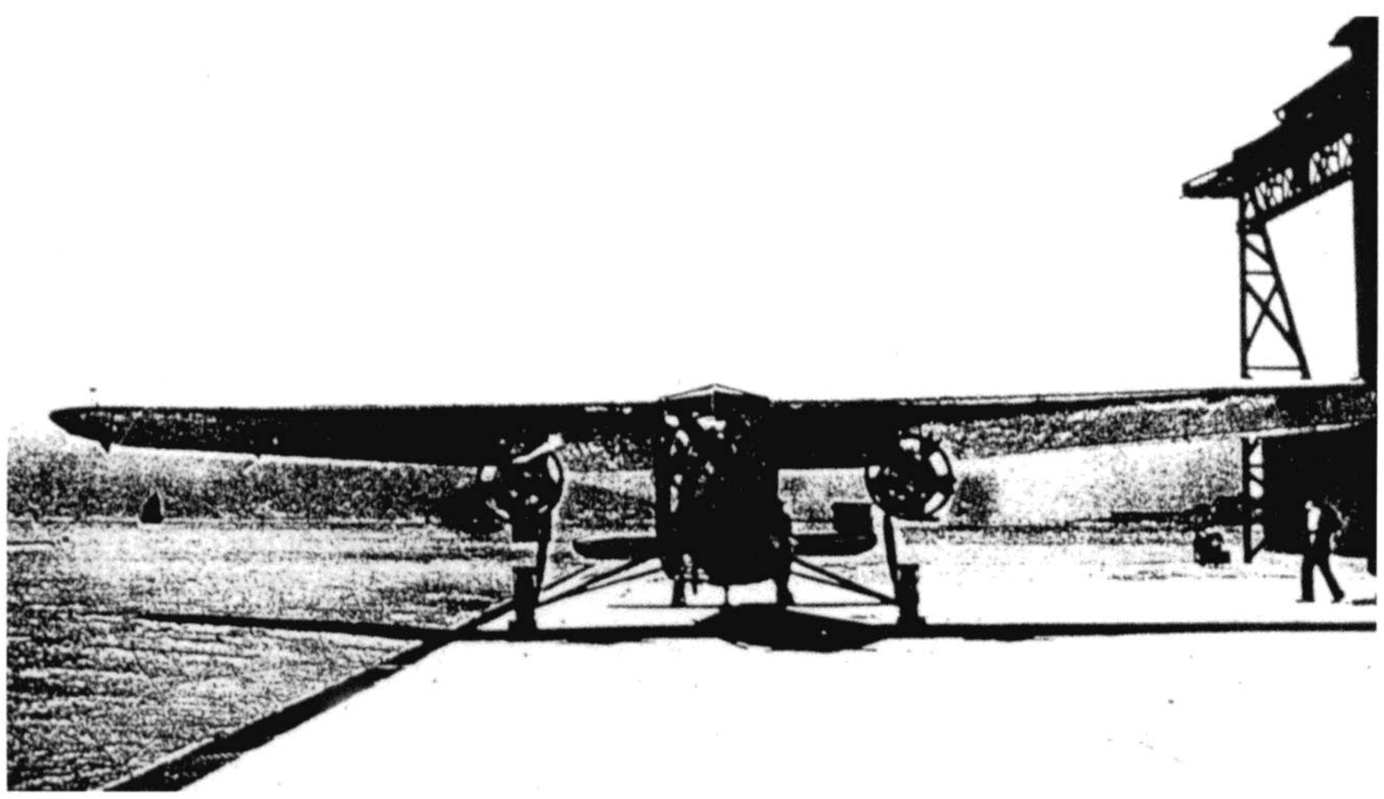
In 1929 General Chang Chen, the Commander of the 49th Division, ordered the building of an aerodrome at Changchow and in December 1931 the British form Boyd & Co, who were associated with Avro and the FEACo, reported that they had received an order from Chang Chen for 14 aircraft. In the same month Avro applied for a licence to export six Avro Gun Rings from Great Britain. They were fitted to training aircraft that the FEACo were to supply in January 1932 via Hong Kong and Amoy to Chang Chen at Changchow.

The FEACo in fact sold six Avro Avian trainers, four Avro 626 Advanced Trainers and two Avro 624 Six three-engined transport, a licence-built variant of the Fokker F.VII. It seems that the gun rings were for the Avro 626s and Avro 624s. The last-mentioned type was intended for use as a bomber or for bombardment training.

Captain Chao Ch'iang was appointed Commander of the Fukien Aviation Squadron and Tuan Ch'i-hsin was Assistant Commander. The first tree of the 12 aircraft arrived in March and trial flights were made by a FEACo pilot with Chang Chen as passenger. Chang had sent two officers to study aviation in England and the Aviation National Salvation Society (Hang K'ung Chiu Kuo Hui) had been organised at Amoy about March 1932 to raise money for the 12 aircraft ordered. On 14 July 1932 one of the Avro 624s crashed while carrying the wife and three children of General Gaston K Wang (Wong), Chief of Staff of the 19th Route Army, for a pleasure flight. A V Harvey of the FEACo flew the other Avro 624 with five passengers from Hong Kong to Amoy in September 1932.

The Fukien Rebellion

Ch'en Ming-shu was Commander of the 19th Route Army. It had moved to Fukien in May 1932 to fight the communists there. Ch'en had earlier headed the Kwangtung Province Government until being expelled from Canton by Ch'en Chi-tang in April 1931. The 19th Route Army suffered several defeats in August 1933 and the communist troops reached within 45 km of Fuchow. At that moment Ch'en made a peace agreement with the Chinese Soviet Republic and the Red Army.



These illustrations possibly show aircraft of the Fukien Air Force.

Top: Avro 626 s/n 105.

Bottom: Avro 624 Six at Kai Tak, Hong Kong.

A "Chinese Republic" (Chung-hua kung-ho-kuo) was proclaimed on 20 November 1933 by Ch'en Ming-shu, Chiang Kuang-nai and Ts'ai T'ing-k'ai. Chiang became Province Governor and Ts'ai Chairman of the Fukien Liberation Committee. The Federal Revolutionary Government of China was set up at Fuchow (formally on 1 December) with Marshal Li Chai-sum as Chairman, but real power stayed in the hands of Ch'en and Ts'ai, who became Commander-in-Chief of the People's Revolutionary Army (Jen-min ke-ming chün). A new flag was adopted, which was red (top half) and blue (lower half) with a narrow separating black stripe and a five-point yellow star with long radiations in the middle.

In July 1932 Ts'ai T'ing-k'ai had taken over the aerodrome and 11 Avro aircraft at Changchow (six Avians, three Avro 626s and two Avro 624s), and formed the 19th Route Army Air Service and Aviation School, which was placed under the command of Captain Liu Chih-yen (James Lau). There were also three Avians at Chüanchow, which belonged to General Tan Kwok Wei. General Gaston K Wang (Wong) was appointed Commander of the Fukien Air Force. Headquarters were at Changchow and there were airfields at Changchow, Chüanchow (aerodrome with hangars south of the city owned by the 48th Division) and Fuchow (owned by the Fukien Government, 1 mile south-east of old walled city, one matshed).

Chinese people in the Philippines were raising money to purchase 20 aircraft for the 19th Route Army and in November two Philippine Chinese arrived in Fuchow to donate funds for an air force[1]. At the same time General Chang Wei-ch'ang, ex-commander of the Canton Air Force and of the Nanking Air Force, and a large number of dissatisfied pilots from Canton joined the 19th Route Army Air Force. It had been rumoured already in May that Chang would take command of this unit. They had travelled via Hong Kong from Hainan, where they had tried to set up a local air force of their own (See under Hainan!). The 19th Route Army disarmed the old Fukien Provincial regiments when independence was proclaimed.

A list of aircraft sold by the FEACo until August 1932 includes six Avians, four Avro 626s and two Avro 624s to Changchow. According to a British report dated 18 August 1932 the Fukien Government had purchased 12 Avians, six "Avro 625s" and two Avro 624s. Most aircraft delivered by the FEACo were registered in Hong Kong and twelve Avians, three Avro 626s, three Avro 637s (an armed version of the Avro 626) and an Armstrong Witworth Atlas II, all registered in the sequence VR-HBS to VR-HCK, were cancelled from the register on 19 October 1933 (VR-HCJ and HCK on 14 and 16 November). It is very probable that these aircraft were all sold to Fukien.

It seems that only tree of the four Avro 626s initially ordered were delivered in 1932 and that the fourth example arrived only in 1933 with two new machines of the same type. A report about the arrival at the end of September 1933 in Hong Kong of six "fighting aircraft", which were to be shipped to Amoy and were intended for the 19th Army, probably refers to some of the Avro aircraft.

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[1] According to an American report two combat aircraft contributed by overseas Chinese reached Fuchow on 18 March. Another intelligence report, dated 4 December 1933, maintains that the 19th Route Army wished to buy some Curtiss Hawks but Nanking did not allow delivery. Two Junkers photographic aircraft had recently been acquired. One of them was in Amoy for the purpose of making a survey of the country from Amoy to Lungyen. Six Farmans had been ordered and two had already arrived. The Farmans could be a mix-up of rumours about the six French fighters ordered and the single Farman donated.

The Fukien Air Force set up two squadrons: No 1 at Fuchow under Colonel Liu Chih-yen (James Lau), and No 2 at Changchow under Colonel Teng Yueh-min (Colonel Tang). Flying and instruction activity was reported to be intensive at Changchow in 1933, but training was suspended for three months during the summer when the aircraft were used to help the army drive off an incursion of "bandits" and "Communists" in northern Fukien. In addition to more offensive duties large quantities of oatmeal was transported to a surrounded city.

On 31 March 1933 a Frenchman named Morant, of the Société Générale Aéronautique, which represented a number of French aircraft companies, received an order for six Nieuport 121C1 single-seat fighters from Fukien. The aircraft were to be handed over at Fort Bayard. When Nieuport could not deliver any aircraft until at the end of the year, the contract was cancelled and Gaston Wang instead ordered six Morane Saulnier MS 225 fighters in July 1933. These aircraft, which were ordered via the Aero Trading Company in Hong Kong (Comte J de Sibour)[2], were to be delivered at Fort Bayard as well and the first three were to arrive 14 weeks after first payment. As planned three aircraft were shipped from Marseilles to Haiphong on 13 September, accompanied by Morane chief pilot Storm. They were then loaded on a British ship at the end of October and shipped to Amoy, where they arrived early in November. The fighters were not armed as had been specified in the contract, however.

De Sibour presented his personal Farman 291, a single-engined five-seat transport monoplane, to the 19th Route Army at Fuchow in July. He had made several long-distance flights with this aircraft previously, including a Paris-Peking-Paris flight in 1931.

Expected support for the rebellion from Kwangtung and Kwangsi never materialised. On 21 November Chiang Kai-shek ordered a general campaign against the 19th Route Army and the Fukien rebellion, sending the 3rd, 4th and 5th, later also the 1st, squadrons of the air force and eleven divisions of the Nationalist Army. On the same day two CAF aircraft that had brought last moment mediators to Fuchow were seized and the Chinese Navy's 3rd Naval Squadron, which was anchored off Amoy, joined the rebellion.

The Nanking troops were concentrated on Fukien's borders, a large number of labourers were employed in rushing the preparation of airfields at suitable places in southern Chekiang and on 17 December hostilities broke out. On the same day the Nanking Air Force started bombing Fuchow.

Little was done to stop CAF aircraft from bombing Fukien aerodromes and cities. Two CAF pilots allegedly joined the Fukien Air Force with their Curtiss Hawks, but this information has not been confirmed. Changchow, Chüanchow and Fuchow aerodromes were bombed and machine gunned with moderate success. Ts'ai's headquarters in the city of Fuchow was also attacked. On 5 January 1934 Yenping was taken and on the 13th naval units landed in Fuchow. The naval establishments at Amoy and Pagoda Anchorage, Fuchow, were taken over peacefully by the Chinese Navy about 10 January. When Nanking troops entered Fuchow the leaders of the "Chinese Republic" fled to Hong Kong and on the 22nd the Revolutionary People's Army capitulated. A new Governor, General Chen Yi, was appointed and the 19th Route Army was re-organised.

CAF bombing had completely disorganised the Fukien Air Force and the officers and mechanics left their posts. Captain Liu Chih-yen led a flight of four Avro trainers to Changchow and then left for Hong Kong and the Chief Engineer managed to burn most of the remaining aircraft before he escaped to Hong Kong as well[3]. Due to the lack of petrol most of the aircraft remained where they were. Three of the Avians were, however, flown out to Swatow, where they were handed over to a General "Sieux" (probably of the Canton Air Force). Two undamaged MS 225 fighters were flown from Fuchow to Changchow and then set fire to. A week before the fighting ended, a Fukien pilot flew the Farman 291 to Fort Bayard (Kwangchow-wan), the French territory in southern Kwangtung, in order to get armament fitted, but instead the French seized it.

The revolt completely washed out the Fukien Air Force and if any serviceable aircraft remained after the defeat they were taken over by the CAF. An order placed in Japan for four Mitsubishi Type 92 Reconnaissance aircraft, 12 Nakajima Type 91 fighters and ten Nakajima-built Ko 4 copies of the Nieuport-Delage ND 29 was not delivered before the end of the rebellion and was later taken over by Kwangsi.

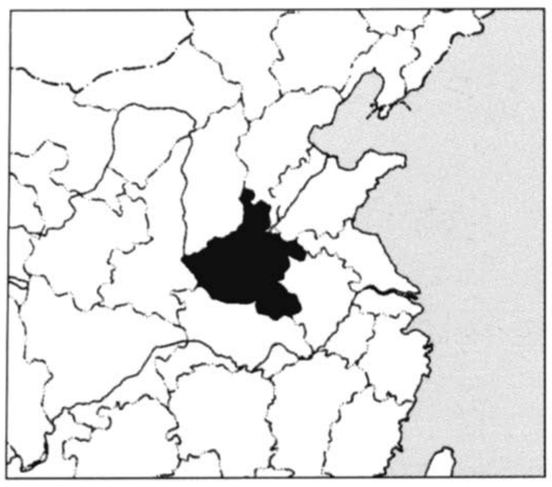
Aircraft used in Fukien

Type	Qty	Year	
Curtiss JN-4 Jenny	6		Not delivered in 1922
Avro Avian	21 (?)	1932	
Avro 626 Advanced Trainer	6	1932	
Avro 624 Six	2	1932	
Avro 637	3	1933	Not confirmed
Armstrong Witworth Atlas II	1	1933	Not confirmed
	2	1933	Ex-CAF, seized
Nieuport 121C1	6		Order cancelled
Morane Saulnier MS 225C1	3	1933	Another 3 not delivered
Farman 291	1	1933	
Mitsubishi Type 92	4		Not delivered
Nakajima Type 91	12		Not delivered
Nakajima Ko 4 (ND 29)	10		Not delivered

[2] According to one report, which seems to be unfounded, 18 Morane fighters and 12 bombers were ordered for delivery in the period January-June 1934. Six had already been sent out by January 1934 and three of these had gone to Fukien, while the rest still remained at Saigon.

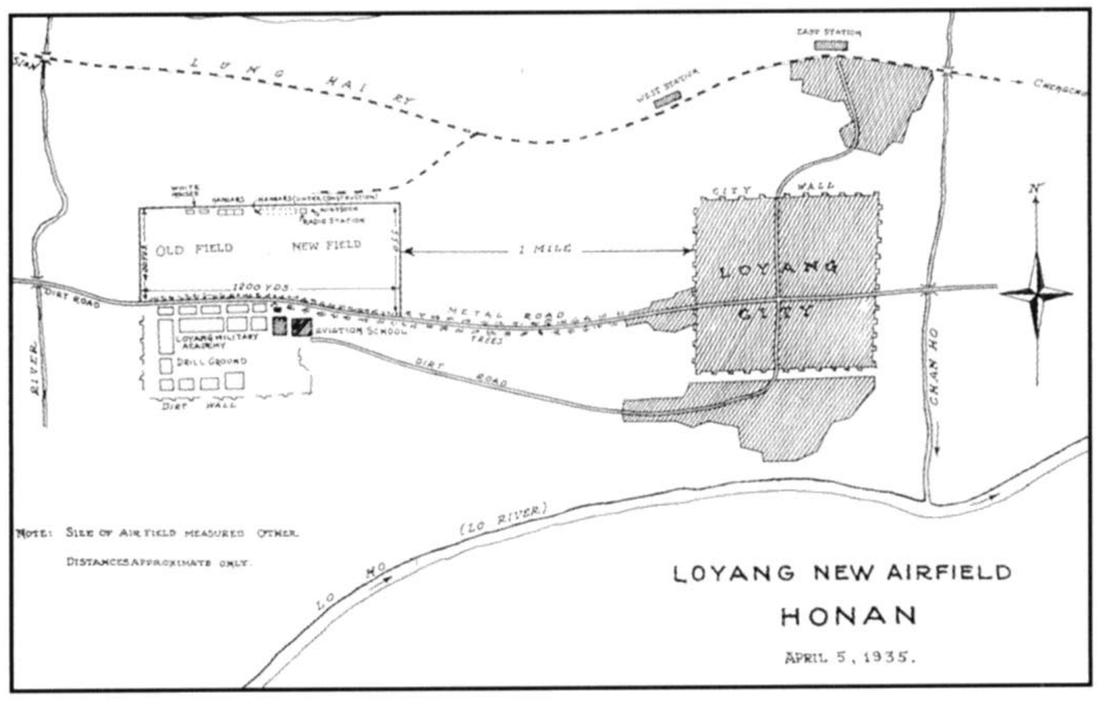
[3] One report put the strength of the 19th Route Air Force at 14 attack, 11 observation, 9 training and 2 miscellaneous aircraft.

Honan



In 1919 the Military Governor of Honan ordered two aircraft from a British firm, the Pekin Syndicate, acting as agents for Handley Page, who were disposing of surplus RAF aircraft after The First World War. Two RAF SE.5A single-seat fighters were shipped from Great Britain on SS "Kitano Maru" and SS "Somali" on 18 October and 18 November 1919, respectively. The Peking Government refused to issue an entry permit, however, and when the aircraft arrived the Governor of Honan transferred the contract to the Peking Aeronautical Department. They took charge of the fighters in Shanghai and transported them to Peking.

In 1924 Honan Governor General Chang Fu-lai acquired two French Farman "hydroglisseurs" (water sleighs) with 160 hp Renault engines for use on the Yangtsekiang river. In the same year General Hu Ching-yi (Hu Jing-I) at Kaifeng was reported to have ordered "several Junkers aircraft" through a trading company. Hu was a long-time subordinate of Feng Yü-hsiang, later Commander of the 2nd Army of Feng's 1st Kuominchün. The alleged order for Junkers aircraft was nothing more than a rumour, however.



There was a tree-section hangar and a small repair shop at the aerodrome, which was situated 3 miles west of the city, just north of Loyang Military Camp.

By June 1926 no aircraft remained at Loyang and in January 1927 it was reported that Wu no longer had any air service. The NRA's advance northwards in 1926 pressed Wu's forces back and at the end of August he retreated across the Yangtze River and Hankow was evacuated in September 1926. Wu remained in Honan, however, until Feng Yü-hsiang finally captured Loyang on 26 May 1927. It seems that most of Wu's aircraft were lost in these battles and there are no reports of any surviving aircraft being captured by the NRA or by Feng.

Wu P'ei-fu

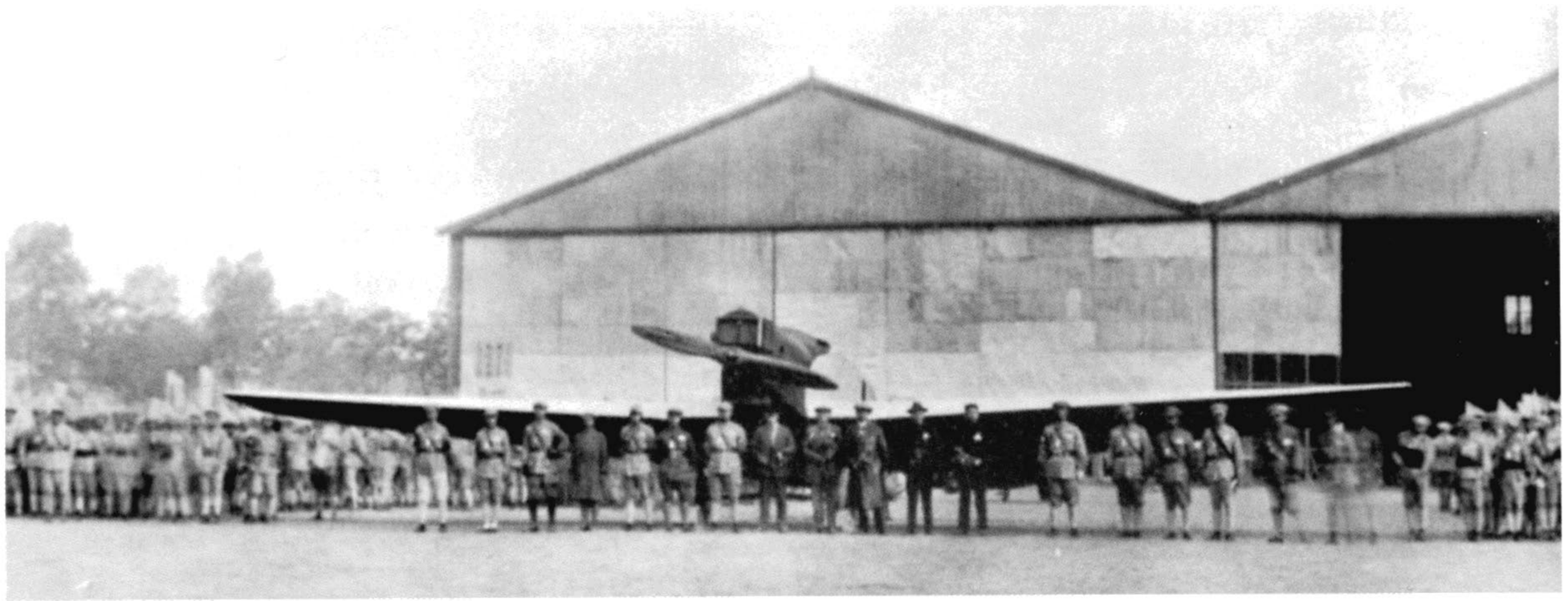
Wu P'ei-fu set up a new base in Hankow (Hupei) late in 1924. In January 1926 he and Chang Tso-lin invaded and conquered Honan. Feng Yü-hsiang was driven out of that province and the war with him continued until April 1926.

Most aircraft of the Chihli Air Force at Paoting were moved to Loyang in Honan and early in September 1925 American intelligence reported that there were 24 Vickers VIMs, 11 Avro 504Ks, eight Vickers Vimys, six Curtiss JN-4 Jennys, two Handley Page 0/7s and one Nieuport scout.

Feng Yü-hsiang

General Feng Yü-hsiang, "the Christian General", was to become the warlord of Honan. See under Chahar (Kalgan) for information on the air force that he established at that place in 1924. On 26 May 1927 he captured Loyang from Wu P'ei-fu and made this city his headquarters. He reorganised his Kuominchün army and then occupied Chengchow and Kaifeng. He met Chiang Kai-shek on 20 June and was promised money, weapons and recognition as

Junkers W 33 of the Honan Air Force.



Junkers W 33 and personnel of the Honan Air Force on parade at Loyang.

KMT chairman of Honan and in February 1928 the Kuominchün became the 2nd Army Group of the Nanking Army. In April Feng's troops helped Chiang to attack Shantung, but there soon was serious disagreement between the two and by the end of April 1929 Feng was concentrating his troops to defend Honan against a Nanking invasion.

In 1928 Feng had started to negotiate with the German Junkers firm and and in December their representatives Sperling and Kaumann proposed an offer for three Junkers W 33s. This transport could easily be converted into a observation and light bombing machine and it was in this capacity that the type was offered to Feng. A contract for three W 33s with spare engines and a repair workshop was signed with Siemsen & Co in January 1929 and Feng also wanted Junkers to train about a dozen Chinese student pilots.

The first aircraft was discharged from "Deike Rickmers" on 15 April 1929 in Shanghai and was assembled and tested at Hungjao. It was then flown by Junkers company pilot Fritz Loose to Loyang, where he stayed to familiarise a number of Chinese pilots on the Junkers. Meanwhile, Feng had ordered four de Havilland DH 60G Gipsy Moth trainers[1] and Arnhold & Co had delivered these to Kaifeng in eastern Honan in March. A Kaifeng Aviation Bureau was organised and a flying school was set up at an aerodrome arranged 1 mile south of city. Eight matshed hangars were erected. In 1929 Feng formed a Bureau for the Planning of Civil Aviation in the Three Provinces Honan, Shensi and Kansu (Yü, Shen, Kan san-sheng min-yung hang-k'ung ch'ou-pei ch'u). It was led by the Civil Governor of Honan, Teng Che-hsi, but never achieved any results.

The uneasy alliance between Feng Yü-hsiang and Chiang Kai-shek broke down in the spring of 1929. Feng mobilised his forces and accused Chiang of aspiring to be a dictator. When two of Feng's subordinates defected to Nanking in May 1929, Chiang appointed one of them, Han Fu-chü, the be the new Governor of Honan. When war finally erupted between Honan and Nanking, Loose was urged to mount a machine gun on the W 33, but he politely refused to do this. While on a reconnaissance mission, the Junkers encountered a Nanking Air Force aircraft, but none of them opened fire and the Junkers was later taken away from Loyang aerodrome in order to save it from being bombed by Nanking aircraft. The other two W 33s had arrived in Shanghai, but were immediately sent to Manila in order to avoid their seizure by the Nanking Government. Eventually, they were sold to Nanking, however.

After Yen Hsi-shan intervened in the war to the favour of Feng, Chiang called off his offensive against the Kuominchün temporarily, but during the following months both sides continued to prepare for war. On 10 October the fighting started again. In late November Feng evacuated Honan, but in March 1930 he returned and advanced on Kaifeng. He took this city on 30 March and set up a new Honan Province Government under Wan Hsüeh-ts'ai. On 22 April he retook Loyang and Chengchow and on 11 May a new period of intensive fighting started. In July Chiang Kai-shek launched a major offensive. By September Feng's army was under heavy attack at Chengchow and at the beginning of October 1930 the war was over. Feng Yu-hsiang went into exile and his army was incorporated into the Nanking army.

In the summer of 1930 the 2nd Squadron of the Nanking Air Force had been stationed at Kueite. One day when the Honan W 33 had appeared over the city it was attacked by a Nanking Air Force Corsair and force landed. It was flown by Liu Chung-shan, the only pilot who could fly this type. Feng's troops managed to disassemble the Junkers, however, and it was taken away during the following night

37 The four Moths purchased by the Nanking Aviation Bureau on 6 December 1928 are probably identical with those delivered to Loyang. The four Moths allegedly purchased by the Nanking Aviation Bureau on 6 December 1928 are probably identical with those delivered to Loyang.

Aircraft used in Honan

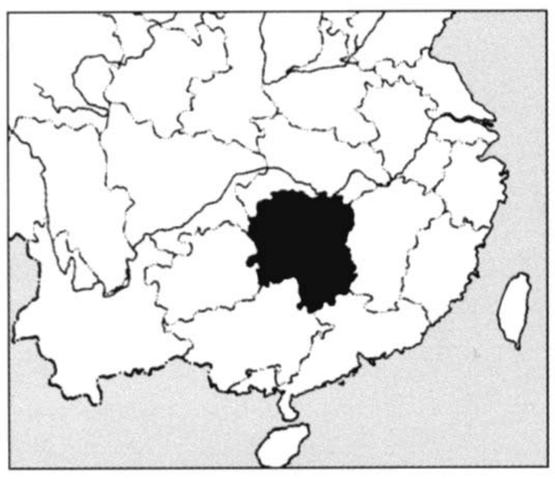
Type	Qty	Year	
RAF SE.5A	2		Taken over by Peking
Vickers VIM	24	1924	From Paoting
Avro 504K	11	1924	From Paoting
Vickers Vimy	8	1924	From Paoting
Curtiss JN-4 Jenny	6	1924	From Paoting
Handley Page 0/7	2	1924	From Paoting
Nieuport fighter	1	1924	From Paoting
Junkers W 33	1	1929	Another two not delivered. Taken by Nanking
DH 60G Gipsy Moth	4	1929	Taken by Nanking.

The three Armstrong Witworth AW 16 fighters presented to the Central Government by Honan.

and sent back to Loyang. On the other hand Feng Yu-hsiang managed to seize a Nanking Corsair, which had made a forced landing and had fallen into the hands of "bandits". The Nanking Government had not been able to produce the ransom demanded by the "bandits" on time. Another Nanking Air Force machine was shot down. The Junkers W 33 and the four Moths were taken over by the Nanking Air Force when Feng's army was incorporated into the Central Government forces.

In 1932 the Honan Provincial Government, under Chairman General Liu Chih, raised a sum through private subscriptions with the intention to buy fighter aircraft for presentation to the Central Government and three Armstrong Witworth AW 16 fighters were ordered from the FEACo. When they arrived in Shanghai the Aviation Bureau arranged that they were flown to Honan. After much celebration they went to Nanking and then proceeded to Chienchiao (Hangchow) early in 1933. In the summer of 1933 another pair of AW 16s were bought by Honan citizens for the Nanking Air Force.

Hunan



General Ho Chien was appointed Governor of Hunan Province by Chiang Kai-shek. He stayed neutral and pro-Nanking and remained in office until 1937. The Hunan Government showed great interest in aircraft and aviation and in 1930 preparations were made for the establishment of an Aviation Bureau at Changsha. A number of firms were asked to submit an offer for six aircraft. It was initially planned to order German aircraft from Focke-Wulf, but other manufacturers were eventually chosen. Although Changsha carried out the negotiations, the orders were apparently made via Nanking and paid for by the Central Government.

In October 1930 L E Gale sold two Vought O2U-1D Corsairs and two Fairchild KR-34 light bombers to the Hunan Government. At the same time Arnhold & Co received a contract for one standard DH 60M Gipsy Moth, one "de Luxe" Moth and two Blackburn Lincock fighters. After some discussions with the Central Government Ho Chien was allowed to keep the Corsairs and Fairchilds when they arrived in the spring of 1931. The two Lincocks were shipped out to China in December 1930, but they were taken to Nanking and incorporated into the Nanking Air Force.

In July 1931 the Hunan Air Force (Hunan Aviation Bureau) was inaugurated at their new aerodrome at Hsin Ho, at the junction of the Siang and Liuyang rivers 3 miles north of Changsha. It was headed by Huang Fei. At the inauguration ceremony two Corsairs, two Fairchild bombers and two Moths were present. At the end of the day the local Arnhold agent secured a contract for six DH 60T Moth

Aircraft used in Hunan

Type	Qty	Year	
Fairchild KR-34-CA	2	1931	
Vought O2U-1D Corsair	2	1931	
DH 60M Gipsy Moth	2	1931	
DH 80A Puss Moth	2	1931	
DH 60T Moth Trainer	6	1931	
Ryan B-5 Brougham	2	1932	

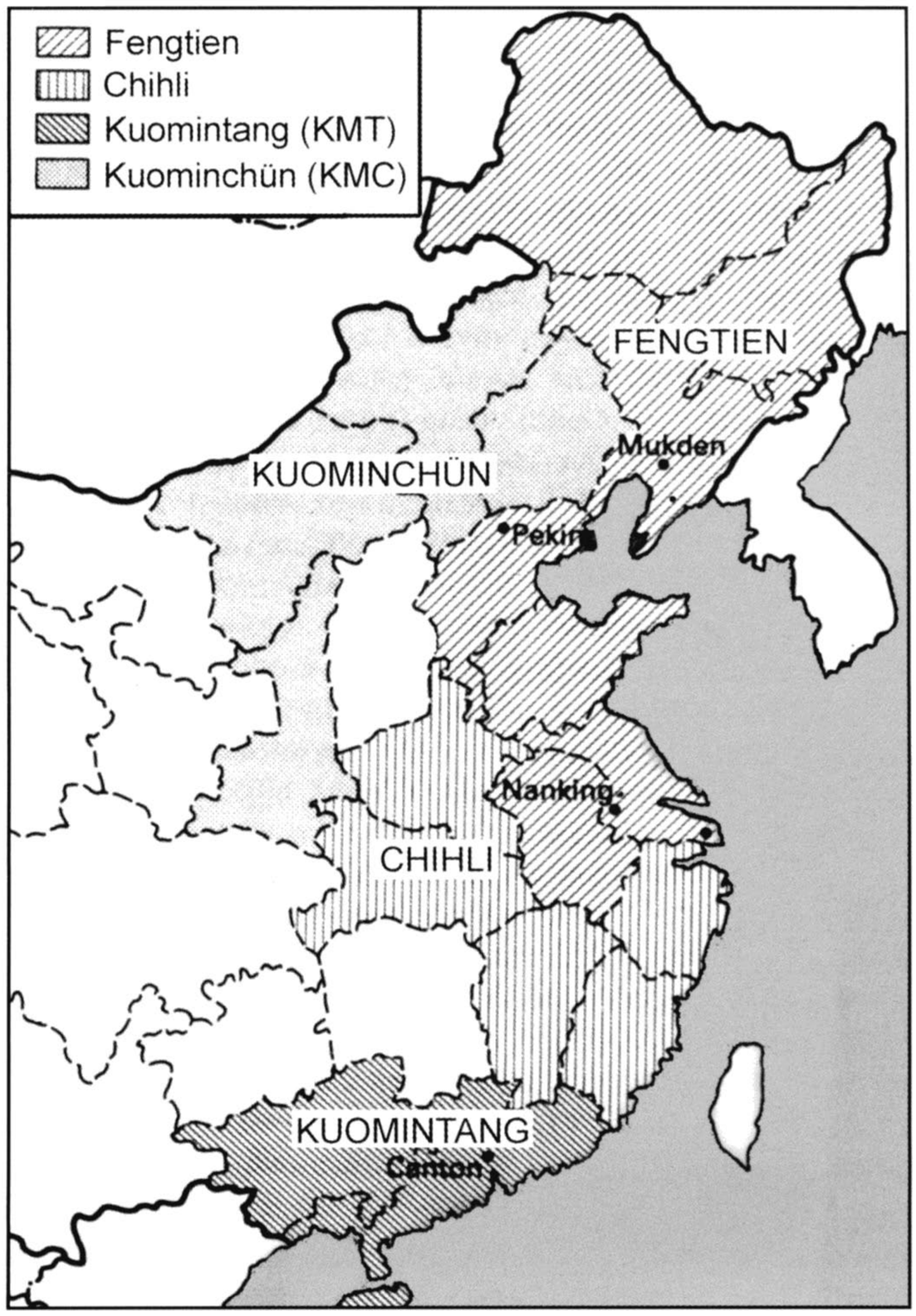
An American intelligence report dated 11.11.31 refers to two Waco aircraft, but this has not been confirmed.

Trainers and another order had already been placed to supply two DH 80A Puss Moth cabin aircraft for liaison work. Although the orders had been signed with the Government in Nanking all aircraft were to be stationed at Changsha and a Hunan Military Aviation School was to be set up with the Moths. On 2 September 1931 one of the original Gipsy Moths crashed at Changsha and the pilot was killed.

The new de Havilland aircraft were delivered in March 1932. By October the equipment of the Hunan Aviation Bureau consisted of eight Moth trainers and two Puss Moths, two Fairchilds and a Ryan seaplane, that had been supplied by L E Gale. A second Ryan B-5, fitted out as a landplane, was on order. The Corsairs had been donated to the Central Government. There was a Training Centre and repair shops and there were aerodromes at Ta Yuan Island and Hengchow, both near Changsha[1], Changteh (south-east of city, no hangars), Pingkiang, Liuyang and Yochow (Chenglingfou). The air force was independently financed but still under the control of the Central Government.

In December 1933 seven Moths, two Ryans, two Fairchilds with machine guns and bomb racks, and one unknown type were reported to be present at Changsha. The Hunan Aviation Bureau was finally abolished in August 1934 and seven remaining aircraft were handed over to the Central Government. After taking over the Changsha personnel in October 1934, the 11th to 14th Squadrons of the Chinese Air Force were formed.

[1] In August 1935 there was one hangar, a radio station belonging to Eurasia and barracks at the Changsha aerodrome.



Participants in the Second Chih-Feng War.

Kalgan (Kuominchün)

The second Chi-Feng Civil War of in 1924 ended when Feng Yü-hsiang, "the Christian General", seized Peking on 23 October. He immediately reorganised his military forces as the 1st Kuominchün (KMC, National Army), while his allies, Hu Ching-yi and Sun Yueh, became commanders of the 2nd and 3rd KMC, respectively. The KMC was not able to keep control of the Peking area against Chang Tso-lin's stronger Fengtien army, however. Feng had previously been appointed Military Governor over the provinces Jehol, Chahar and Suiyüan and early in 1925 he moved his headquarters from Peking to Kalgan in southern Chahar. The 1st KMC started to grow in size and in addition to the three north-western provinces Feng's subordinates controlled Honan, Shansi and Kansu.

After the Civil War in 1924 the Peking Aviation Bureau fell into the hands of the 3rd KMC under General Sun Yueh and General Ho Sui was appointed Director.

On 4 September 1925 an American intelligence officer reported on aviation in the Peking area. At Ch'ingho there were four hangars and a workshop with sufficient spares to construct three Vickers Vimys and forty new Rolls-Royce engines were on hand. A Mr Wu headed the Aviation Bureau and 116 men were employed. During the past year six Avro 504Ks had been rebuilt and one other had been built from scratch. A second machine was under construction at the time of the visit. Two Vimys had been fitted with bomb racks inside the cabin. Five Italian 180-lb bombs could be carried, one in the rack and four on the floor. Five such bombs had been dropped during the last war. Two VIMs had been fitted with machine guns. There were eight pilots and seven students and about 60 men, but no foreign instructors. The aircraft inventory consisted of four Avros, two VIMs and eight Vimys.

At Nanyüan were three hangars, storerooms and quarters for personnel. There were five pilots, 30 students and about 100 mechanics, but very little flying was done, the establishment was badly run and the equipment was in poor condition. There were 13 Avro trainers, of which eight were unserviceable, one Caudron, plus a few unserviceable examples of the same type, and two Vimys. The last of the Vickers Vimys at Peking, some nine or ten aircraft, were taken over and transported to Kalgan when Feng evacuated Peking in 1925.

The Soviet Union offered military assistance in April

1925 and Feng immediately accepted this. A resolution was taken in the Moscow Politburo on 14 April to help Feng. A month later it was decided to send arms and advisors to Kalgan and to start a military school there. The total number of instructors to be sent to Canton, Kalgan (1st KMC), Honan (2nd KMC commanded by Yüeh Wei-chün) and Peking was set to 128. At this stage no aircraft were to de delivered, however. A group of Russian advisers and specialists headed by V K Putna ("Chen Chiang") soon arrived at Kalgan and in the summer of 1925 the first arms started to arrive. In June Soviet advisers led by G B Skalov ("Sinai") arrived at Kaifeng, Honan. No aviation specialists were apparently included in this group.

On 9 July five civil-registered Russian aircraft participating in a long-distance propaganda flight from Moscow to Peking arrived at Kalgan. One of them, Junkers F 13 R-RDAP, was damaged on landing and had to be send back to the USSR, but the others left for Peking after a few days and were joined by AK-1 R-RDAX, which had arrived on 16 July.

In August it was reported that Feng Yu-hsiang had ordered 20 German aircraft from A Walte & Co three weeks earlier. They were to be delivered to Kalgan in 3-4 months. The German Government met the deal with disapproval and the political and practical problems associated with the delivery prevented its realisation. Feng was now determined to establish a modern aviation bureau and requested radio equipment and aircraft from Moscow instead.

On 28 September 1925 Moscow decided to send six new aircraft to Kalgan immediately. Other Soviet aircraft had already arrived, including two R-2s, which were by that time unserviceable. The R-2 was a Soviet-built copy of the de Havilland DH.9 with an Armstrong Siddeley Puma engine. The number of new aircraft was soon increased to 16 and another 10 were ordered for Yüeh Wei-chün's 2nd KMC. Yüeh's aircraft were destined never to be delivered, however, as no suitable way of sending them to Honan from the USSR existed. On 19 October the number of aircraft on order was again reduced to six. In fact, the first six intended for shipment to Canton were earmarked for Feng instead, because there was no opportunity to transport them to Canton at that time.

At the beginning of December 1925, V M Primakov ("Henry A Lin"), who had succeeded V K Putna as chief military adviser to Feng, reported that the Kalgan air force consisted of a total of eight two-seat aircraft, of which two were unserviceable. An American intelligence officer visiting Kalgan on 11 December 1925 saw five Avro 504s, two Handley Pages and three Vickers VIMs. On 10 December a train had left Peking for Fengtai with four large and seven small aircraft belonging to Feng's troops. This was probably the same aircraft. Earlier in the year Feng was reported to have six Avros and a number of crashed machines of the same type in store at Chingho and Nanyüan. At Paoting there were 12 Vimys, VIMs and Avros, which had been taken there from Loyang. Four Vimys, two VIMs and four Avros were operating with Feng's army to the north-east of Peking.

In January 1926 Wu P'ei-fu, who together with Chang Tso-lin had turned against Feng at the end of 1925, invaded and conquered Honan. Chang Tso-lin and his allies attacked from the east and north-east and they took Peking on 16 April but were stopped by the KMC at the Nankow Pass about 30 miles north-west of the city.

Three Soviet pilots, Stepanov, Pyatnitsky and Shestakov, had arrived at the front in December 1925. At the beginning of that month guns and other armaments, including six aircraft intended for Feng, started to arrive at Urga (Ulan-Bator) in Mongolia. The order for this consignment was dated 16 November 1925. Three aircraft and 400 bombs were delivered from the USSR in February-March 1926 and by 4 April the whole consignment had been handed over. A Soviet list of deliveries until 1 June 1926, dated 9 July 1926, includes only three aircraft supplied to Feng for 300,291 roubles, however.

The aircraft supplied by the Soviet Union were probably R-1s (DH.9As) and/or R-2s (DH.9s). The planned delivery of a further six machines was discussed in May 1926, but on 4 August the USSR decided not to send any more aircraft. They were, however, to supply three armoured cars and the necessary materials for repairing defective aircraft.

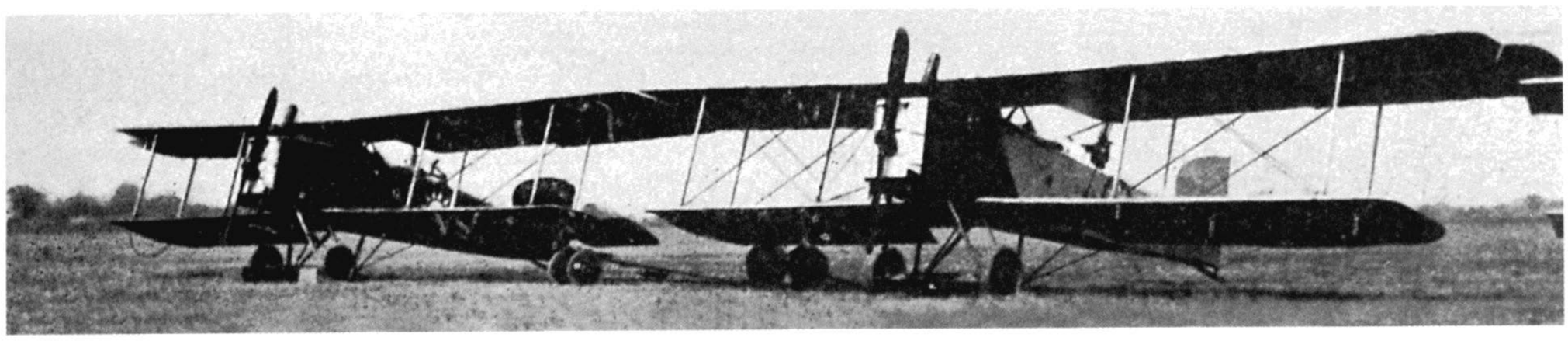
The KMC resisted the attack on Chahar until 16 August 1926 but Shansi warlord Yen Hsi-shan had now turned against Feng as well. Chahar and Suiyüan were given up and the KMC retreated into Kansu, east of Shensi. Feng wrote in vain to the Soviet Military Attaché on 30 October that the KMC was in urgent need of 12 aircraft, but it was too late - the Russians had lost interest in Feng.

British intelligence reports are rather vague on Feng Yü-hsiang's air force and say that the Soviets supplied 14 Caudrons and Fokkers (incorrect), and six DH.9As during July and August 1925. There was also a rumour that another six DH.9s had arrived in July 1926. Before Feng retreated to the north of Peking in March 1926 he was thought to have had about 30 aircraft, including Vickers Vimys, Vickers VIMs and Avros.

Feng travelled to the USSR and after he returned from Moscow in August 1926 he soon started to negotiate with the KMT. On 26 May 1927 he captured Loyang from Wu P'ei-fu and made this city his new headquarters. He met Chiang Kai-shek on 20 June and was recognised as Governor of Honan. (See further about Feng under Honan). Feng apparently still had two Vimys, three VIMs and five Avros in May 1927.

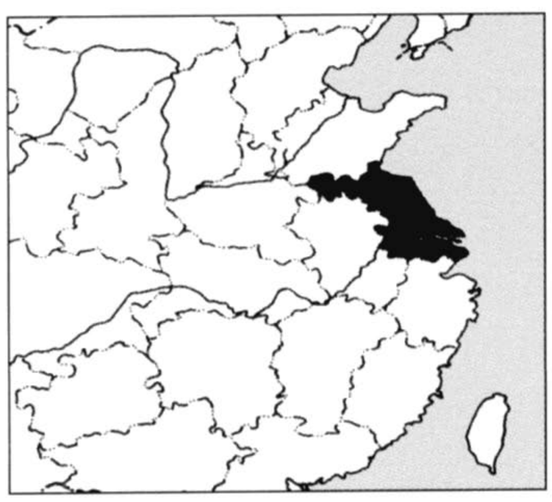
Aircraft used by the KMC

Type	Qty	Year	
Caudron (early type)	>1	1924	
Handley Page O/7	2	1924	
Vickers VIM	>3	1924	
Vickers Vimy	10	1924	
Avro 504K	(20)	1924	Including at least 2 built in Peking
R-2 (DH.9)	>2	1925	
(R-1/DH.9A) ?	6 (?)	1926	



Ex-Kiangsu Air Force Breguet 14s that were captured by the NRA forces from Sun Ch'uan-fang.

Kiangsu (Nanking)



Nanking General Ch'i Hsieh-yuan, Military Governor of Kiangsu, received several offers from German aircraft firms in 1923-24: Albatros (addressed to Wang Ku-p'an), Caspar and probably also Junkers and in January 1924 an offer for two-seat light aircraft made by Dr Liese for the Dietrich-Gobiet Flugzeug-werke was tuned down. By February 1924 a military aerodrome had been arranged on the parade ground of the local garrison, near Nanking, and two canvas hangars and a matshed had been built. There were three Vickers Vimys, including one crashed, two Vickers VIMs and two Avro 504K trainers, which had come from Peking about August 1923. All had been fitted with locally made bomb racks. There were four Chinese pilots and 40 mechanics at that time, but in July there were only two Chinese pilots left.

When the war between Kiangsu/Ch'i Hsieh-yuan and Chekiang/Lu Yung-hsiang started in September 1924 Ch'i had two Vimys and six VIMs fitted out as bombers, but they were little used. In August Ch'i and his ally, ex-Tuchun of Fukien Sun Ch'uan-fang (Chihli faction), had moved their forces to the border of Chekiang and on 3 September war broke out. Lu Yung-hsiang fled to Japan on 13 October and the Chekiang army then surrendered and was absorbed by Sun's and Ch'i's forces. Four VIMs crashed after the opening of hostilities and in December only two Vimys and two VIMs remained.

On 11 December Ch'i Hsieh-yuan was formally relieved from his post as Military Governor of Kiangsu. His enemy, Lu Yung-hsiang, who had returned to China from his exile, had been appointed Pacification Commissioner and was to go south with a large Mukden army to take back Kiangsu. Many of Ch'i's subordinates refused to fight and in consequence of this he had handed over his office to the Civil Governor.

General Chang Yung-ming, the Commander of the 5th Hupei Mixed brigade, who fought for Sun and Ch'i in the war against Lu, had remained in Shanghai as Military Governor, despite the orders of his superiors. On 10 January 1925 the combined armies of Sun and Ch'i took Lunghua, and General Chang Yung-ming disappeared to Shanghai. If any of the Chekiang Air Force Breguets remained at Lunghua they were taken over by Sun, as was the factory at the aerodrome.

In the meantime the Fengtien (Manchurian) troops under Chang Tsung-ch'ang had arrived on the scene. On 16 January 1925 they attacked and on the 25th the whole Kiangsu army collapsed and retreated towards Shanghai in complete disorder. On 29 January Shanghai was taken by Manchurian troops and in the summer of 1925 Lu Yung-hsian, who was completely dependent upon Fengtien, took power, but he was soon superseded by Fengtien general Yang Yü-t'ing.

A New Nanking/Shanghai Air Force

In October 1925 Sun Ch'uan-fang, as a countermeasure against Fengtien's extension of its power, declared himself Commander-in-Chief of a Chekiang, Fukien, Anhwei, Kiangsi and Kiangsu union. He attacked Yang Yü-t'ing, defeated him and forced him to evacuate Shanghai and Nanking. Four Breguet 14s and two or three Caudron C.59s were captured from the Manchurian armies in Kiangsu in October and November 1925 and with these Sun Ch'uan-fang founded an air force of his own at Nanking. The wealth of the five provinces permitted Sun to start to expand his army

An American intelligence report dated 4 September 1925 detailed the aviation assets at Nanking aerodrome, but it is not clear if this was before or after Sun Ch'uan-fang had moved in. There were two small T-shaped hangars and a former temple capable of housing four aircraft minus wings. Although three pilots and 40 mechanics were stationed in Nanking, there had been no flying for some time. There were three Avros, of which one, which was unserviceable,

Aircraft used in Kiangsu (Nanking and Shanghai)

Type	Qty	Year	
Vickers Vimy	3	1923	Ex-Peking
Vickers VIM	6	1923	Ex-Peking
Avro 504K	(3)	1923	Ex-Peking
Breguet 14	(8)	1925	Ex-Manchuria/Chekiang
Nieuport (?)	1	1925	
Caudron C 59	(5-8)	1925	Ex-Manchuria
Morane Saulnier MS 35	2	1925	Ex-Chekiang
Schreck FBA 17 HMT2	3	(1926)	

was fitted with an 80 hp Renault engine[1], one VIM, one Vimy, one single-seat Morane-Saulnier monoplane, one two-seat Morane-Saulnier and a Breguet 14. In addition there was a Vimy centre section, two Breguet fuselages, a few wings and two small engines in crates.

Sun's air force was first concentrated at Chien Chiao, 7 miles north of Hangchow. At this aerodrome there was a double hangar covered with corrugated iron. Construction of a second hangar had been started, but there were no materials to complete it. The aircraft inventory consisted of four Breguet 14s, of which two were unserviceable. There were also a Nieuport fighter and an Avro, both unserviceable. Hungjao aerodrome in Shanghai was deserted, as was a seaplane base at Hukow, Poyang Lake in Kiangsi, where the Navy had a floating hangar.

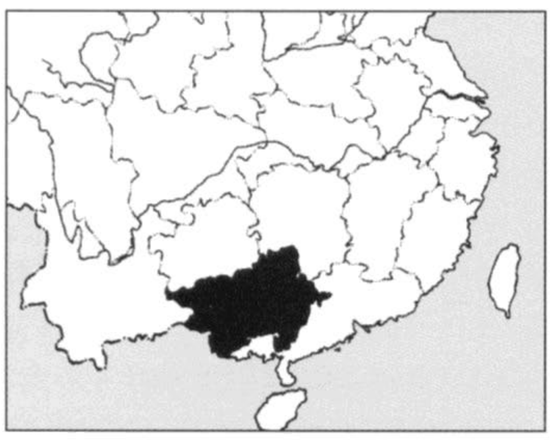
All aircraft at Hangchow were moved to Hungjao on 26-29 January 1926. Seven aircraft arrived, two "scouting" and five "fighting" aircraft. Five of them carried French roundels and two had no markings at all. Of the latter two one had been captured from Fengtien troops and at least one of the others had earlier belonged to Lu Yung-hsiang. By April there were four Breguets, one Avro and a Nieuport "trainer". Another three Breguets were at Pengpu and a number of aircraft were mobile with Sun's forces: two Moranes, two Avros, one Vimy, one VIM and one Breguet. By July 1926 the air force at Hungjao consisted of two Breguet 14A2s, five Caudron C.59s and a single Morane Saulnier.

Chiang Kai-shek's Northern Expedition, which started in the summer of 1926, soon threatened Sun Ch'uan-fang. In the autumn of 1926 Sun's forces advanced west from Nanchang and attempted to drive back the NRA, but on 9 November he had to evacuate that city. He now went to Tientsin to ask for help again from Chang Tso-lin and Chang Tsung-ch'ang. The three warlords agreed to recognise Chang Tso-lin as Commander-in-Chief of the so-called Ankuochün (National Pacification Army) and a large army of Manchurian and Shantung troops was to be sent to Shanghai. Fighting continued until March 1927, when many of Sun's allies had defected and the NRA had defeated his army. Shanghai was taken by the NRA on 22 March and Nanking on the 24th.

On arrival in Nanking the NRA found several aircraft left by Sun Ch'uan-fang: two Breguet 14A2s, five Caudron C.59, a Morane MS 35 and three Schreck FBA 17 HMT2 amphibians. In addition there was a dismantled and unserviceable aircraft in a hangar. All aircraft were immediately taken over by the new Nanking Government and painted with the 12-pointed star national insignia. Sun had to leave his original base area, but continued to fight the NRA. In August 1927 he was back to attack Nanking, but was fought off with great losses on both sides. A new attack by Sun and Chang Tsung-ch'ang in December was also unsuccessful and their forces were then driven north into Shantung by the NRA.

[1] This must have been the Avro 504 with 80 hp Renault (Avro 548) imported to Shanghai in 1920. See under Chekiang!

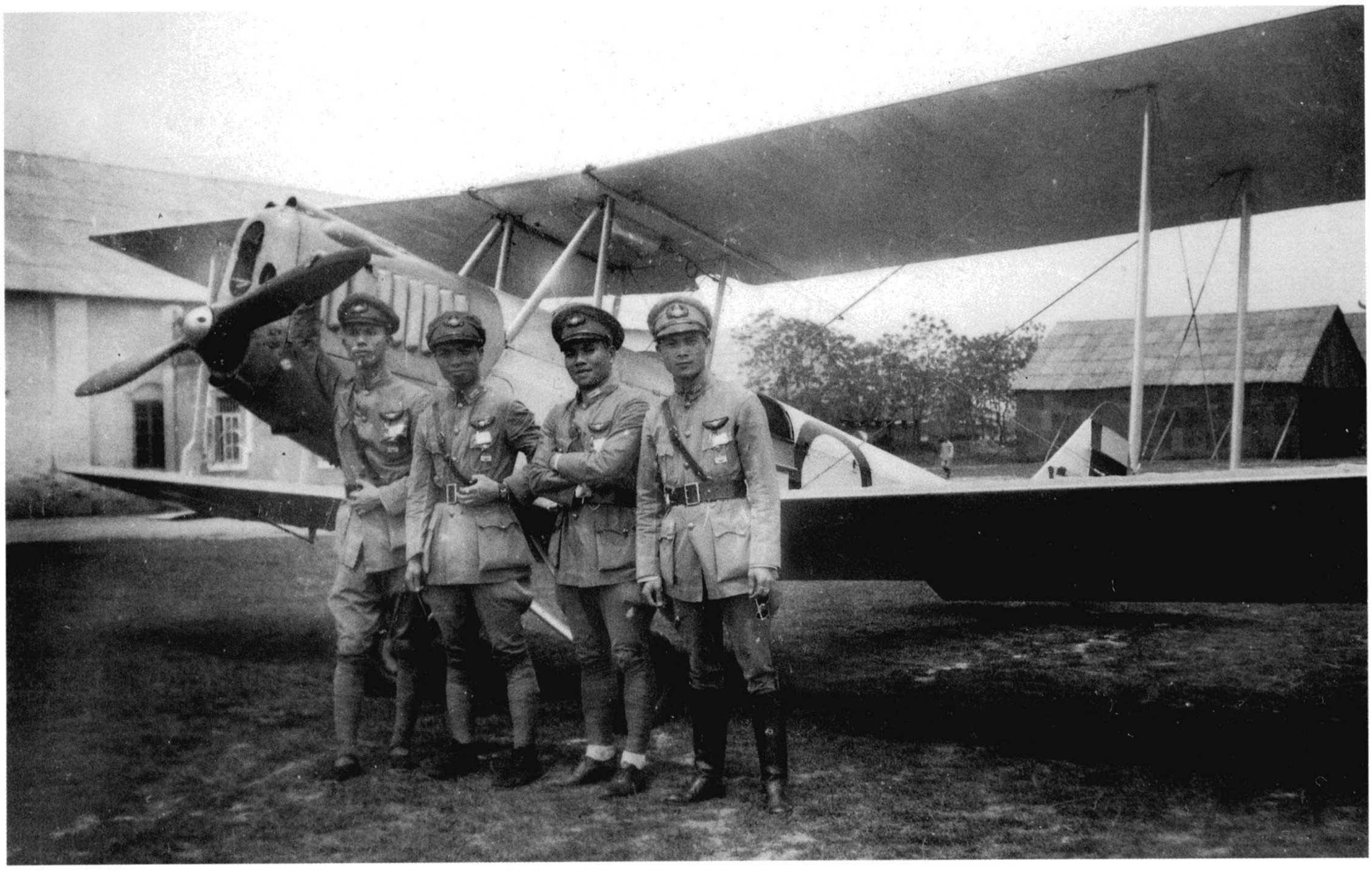
Kwangsi



Already in 1928 it was reported that the Kwangsi Province was about to set up an aviation bureau. British intelligence thought that four aircraft had been bought and that they had arrived in Kwangsi via Pakhoi early in 1930. It was rumoured that the Kwangsi Arsenal was making bombs. Later in the same year it was reported that Canton had managed to buy two American aircraft in Hong Kong, which Kwangsi had originally ordered. The Kwangsi agents had been unable to get them out of Hong Kong. These reports are all doubtful, however, and none of them has been confirmed.

After the last Kwangtung troops evacuated Kwangsi on

Line-up of the Kwangsi Air Force with a Westland Wapiti, three AW Atlases, two AW 16s, three Avro 626s and at least five Avro Avians.



A Kwangsi Air Force Avro Avian trainer. (Wings of China)

8 May 1931 the two provinces entered an alliance and their relations changed from enmity to friendship. On 16 May Li Tsung-jen and other Kwangsi generals met in Canton and discussed a co-ordinated offensive against Nanking. On 1 July a new "National Government" was set up in Canton and Li Tsung-jen and Ch'en Chi-tang of Canton started to plan a campaign of their own with the 1st and 2nd Army Groups. In July 1931 a new provincial government led by General Li Tsung-jen was set up at Nanning in Kwangsi.

The so-called Southwest Political Council (Hsi-nan hsing-cheng-ch'ü) and Southwest Military Branch Council were organised on 3 January 1932. Although these organs represented the five provinces Kwangtung, Kwangsi, Yünnan, Kweichow and Fukien, the military leaders at Canton and Nanning dominated both. In reality the Council had authority only over Kwangtung and Kwangsi, which now became practically independent of the Central Government in Nanking.

Kwangsi Air Force formed

The formation of the Kwangsi Air Force was inaugurated early in February 1932 by the delivery to Nanning of a Westland Wapiti IV two-seat reconnaissance bomber and a pair of trainers, an Avro 621 Lynx and an Avro Avian. A further 13 British-made aircraft were scheduled for delivery shortly: three Wapiti VIIIs, three Armstrong Witworth Atlas II two-seat reconnaissance bombers, two Armstrong Witworth AW 16 single-seat fighters, a Saunders-Roe Cutty Sark amphibian and four Avro Avians. All these aircraft had been purchased from the Far East Aviation Company (FEACo) in Hong Kong[1].

A Civil Aviation Bureau was formed on 19 March and a training class of 30 students was selected and sent to Hong Kong for training. In addition twenty Kwangsi students were sent to England for a flying course at the Air Services Training School. Nanning was the Kwangsi Air Force's first aerodrome, but the construction of a new aerodrome at Liuchow in the centre of the province started at a place about 2.5 miles south of the Liu River. When three of the new aircraft arrived in Wuchow from Hong Kong, the delivery pilots flew stunts over the city before landing on the Government aerodrome across the river opposite the city. The aircraft later left for Nanning. Another three, probably an Atlas, a Wapiti and an Avian, arrived in Wuchow on 9 June. Seven additional Avians and two Avro 626 Advanced Trainers were ordered in the autumn of 1932.

Colonel Lam Wai-hsing (Liu or Lin Wei-ch'eng), a Russian-trained pilot, was appointed Commanding Officer (Chief of the Aviation Bureau). The FEACo became the sole supplier of all aviation equipment to the Kwangsi Air Force. By arrangement with the Government the company

[1] According to the newspapers, Kwangsi generals Li Tsung-jen and Pai Chung-hsi had placed orders for 12 training and eight combat aircraft for immediate delivery before 19 August 1931. On 14 April 1932 the newspapers reported that a rush order had been placed for two Saunders-Roe Cutty Sarks. It seems that only one was delivered, however.

Armstrong Witworth AW 16 with its former Hong Kong civil registration VR-Hxx still visible.

had established a large staff at Liuchow and a British instructional mission of seven men under Flight Lieutenant J R Brown was hired to organise the new air force. The foreign advisers picked up the aircraft at Hong Kong and flew them up to Nanning. There were initially three pilots and two, later three engineers. The Kwangsi Aviation Bureau moved from Nanning to Liuchow and was inaugurated there on 24 October with an air display.

In July the Cutty Sark flew to Hong Kong with a pilot badly injured in a crash and a second ambulance flight was made in September. When General Ch'en Chi-tang took over the Chinese Navy squadron stationed in Kwangsi in 1932, the commanding officer of the flotilla, Rear-Admiral Chan Chak, disapproved of this move and started a mutiny. A naval engagement took place and one of the revolting cruisers, "Fei Ying", was destroyed by aerial bombing.

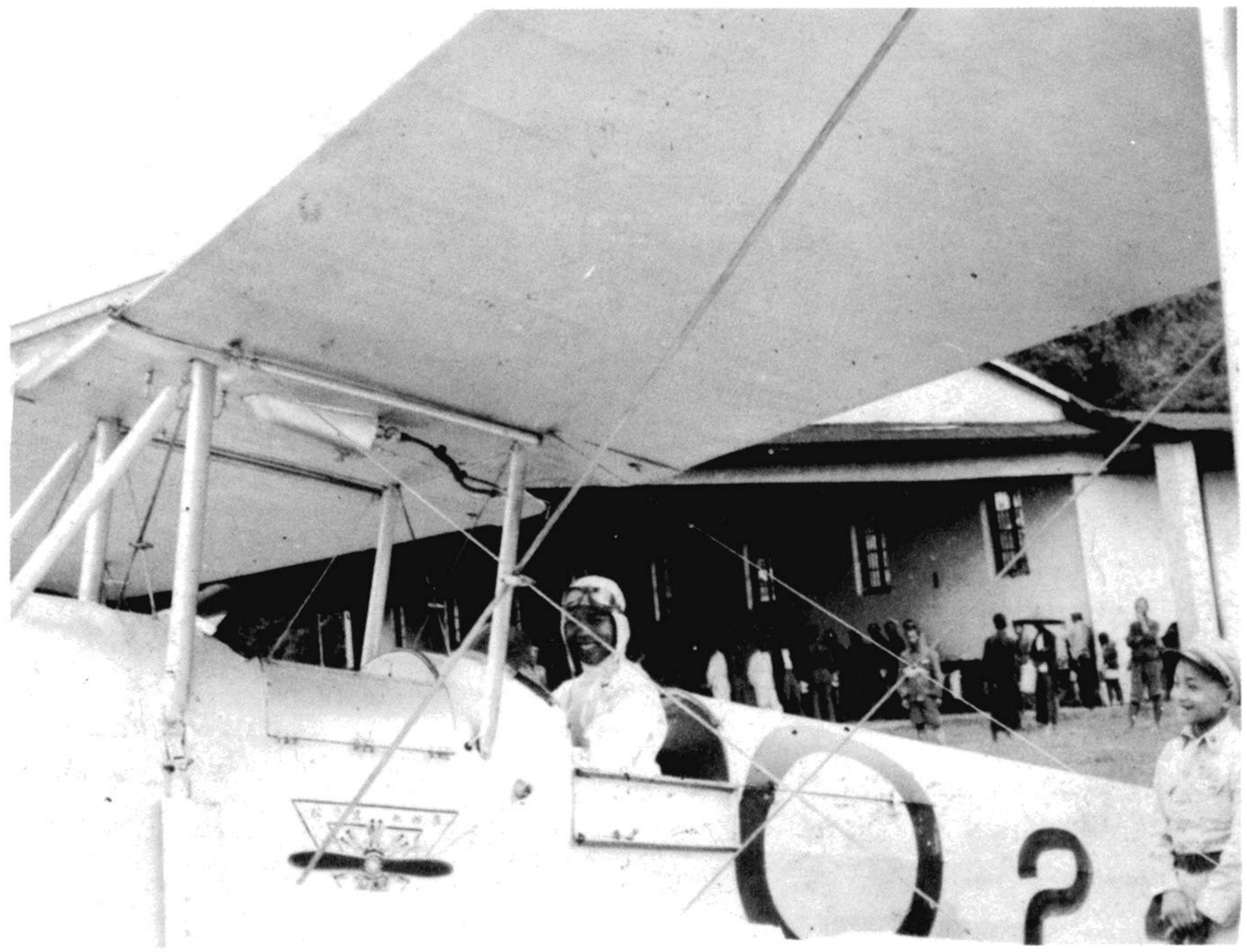
By December 1932 the Kwangsi Air Force consisted of three Atlases, four Wapitis (one with Jupiter engine), two AW 16s, eight Avians, three Avro Lynx trainers and a Cutty Sark. Most of the aircraft had now been moved to Liuchow, the new headquarters of the Air Force, but the Wuchow airfield was being improved and in 1933 a new aerodrome was constructed at Nan Kan Chow.

In February 1933 the first class of Kwangsi aviation cadets, 22 men, graduated from their first period of training at the Far East Flying Training School in Hong Kong. Twenty of these later graduated from the Canton Aviation School, returned to Kwangsi and were all posted to Liuchow.

Kwangsi Air Force crews in front of Westland Wapiti s/n 109.

On 29 April instructor Ronald J Stevens, who had been with the Kwangsi Air Force since 12 March, lost his life in a crash at Liuchow. A few days later student Wang Yuen-ming was killed in another crash with a new Avian and on 14 July two aircraft collided during manoeuvres. One of them caught fire in the air and crashed, the pilot and the mechanic loosing their lives, but the other machine managed to land and was possibly repairable.

There were aerodromes at Nanning, with one hangar and two matsheds, Wuchow, with one small



Avro Avian s/n 24 of the Kwangsi aviation school. (Wings of China)

matshed, Kwaiyuen, with one matshed, and at Liuchow, where there were two large hangars and the aircraft factory described below. The Liuchow aerodrome was completed during the summer of 1933.

By August 1933 five of 12 aircraft then on order from the FEACo had arrived. One was to be flown in from Hong Kong by instructor C B Musson, and the remaining six were delivered later in the year. Six of these aircraft were trainers and six were combat aircraft intended for the "1st Company" of the Kwangsi Air Force. The "combat aircraft" were probably Avro 637 two-seaters, of which six were delivered late in 1933. In November twelve Kwangsi aircraft participated in joint Kwangtung-Kwangsi air manoeuvres.

A factory, primarily intended for production under licence of Avro aircraft, the Kwangsi Mechanical and Aircraft Factory at Liuchow, was set up in 1932. Its first product was a single-seat trainer, which was successfully tested-flown by FEACo pilot A V Harvey in July 1933. Late in the summer of 1933 the British instructors resigned due to shortage of funds, but when funds became available again early in 1934 they returned to Liuchow.

By March 1934 the Kwangsi Air Force consisted of approximately 12 Avians, one Avro 626, one Avro Cadet, six Avro 637s, three Atlases, three AW 16s and three Wapitis. The Cutty Sark was out of action due to an accident. There were over 60 trained pilots. The thorough training programme carried out had been successful and the next stage of development was the planned establishment of two squadrons of nine bombers and nine fighters, respectively.

The Kwangsi army under Pai Ch'ung-hsi (Chief of Staff) had been reorganised and modernised. It was called the 4th Group Army, a nomenclature granted by the Nanking Government in 1928. The army, like the rest of the province, adopted a policy of self-sufficiency and costly programmes for developing munitions supply were set up. In 1934 German experts were employed to improve the Nanning Arsenal. The Kwangsi Mechanical and Aircraft Factory was part of these efforts and in 1934 it started to turn out licence-built Avro aircraft. Two series of six Avians each were completed in 1934, and in addition to this, two Avro 631 Cadets were constructed. A glider designed by Chen Kuo-liang was completed at the end of July and was taken over by the Kwangsi Air Force.

In August 1934 a second class of 30 students under the leadership of Lieutenant Dai Sik-yam was sent to the Far East Flying Training School to study aircraft maintenance and engineering. During the same month the squadrons already set up were bombing communist troops in the south of Honan.

The British Air Mission Returns

In 1934 General Lam Wai-hsing was still Chief of the Air Bureau (Commanding Officer). The British Air Mission already mentioned consisted of Chief Adviser, Flight Lieutenant J R Brown and six advisers/instructors. These included G B Musson and P R May, flying instructors, D H Stevens and F Fidler, technical instructors, E Hutchings, wireless and photography instructor, and C H Hatton, advisor and engineer in charge of the aircraft factory. There were about 80 students receiving flying instruction and six pilots and six mechanics, who were under charge of Colonel Liao, the Commander of the Flying School, left for instruction in Japan late in 1934. The flying school had 12 Avians, six Avro 637s, two Cadets, two Atlases, three AW 16s and three Wapitis.

In September 1934 four Japanese aircraft arrived that

Kwangsi Air Force 1935

In August 1935 the Aviation School was reported to operate 30 Avians. The single Squadron had eight Avro Cadets, a single Avro 621, an Avro 626 (plus two under construction at the factory), five Avro 637s (photographic and gunnery training, including one being rebuilt), four Wapitis (bombing, one being rebuilt), three AW 16s (fighting), four Atlas Mk IIs (army co-operation), two Army Type 91s (fighting, one out of service) and two Army Type 92s (bombing, unserviceable). There were 93 pilots, many of them Cantonese.

An American report dated 1 July 1935 listed 28 Avians, 2 Avro 626s, 6 Avro 637s, 6 Cadets (including 4 copied), 6 Atlases (including 4 copied), 3 Armstrong Witworth light bombers, 3 Armstrong Witworth fighters, 4 Wapitis, 2 Nakajima 91s and 2 Mitsubishi 92s.

Avro 637.

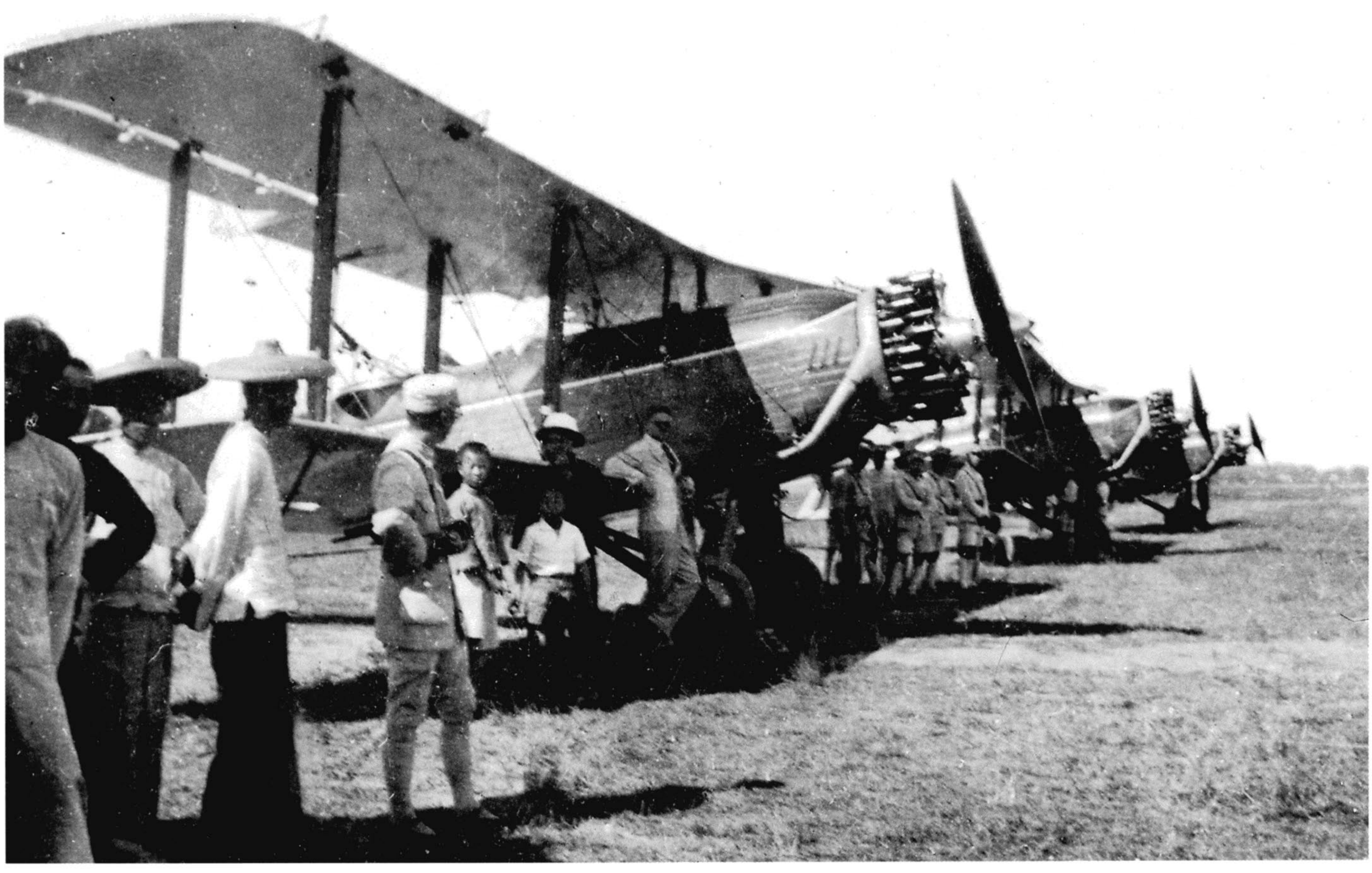
had been purchased cheaply and were intended for evaluation: two Nakajima Army Type 91 single-seat fighters and two Mitsubishi Army Type 92 two-seat bombers. Assembly took place at Wuchow, where a Japanese pilot tested the aircraft before they were flown to Nanning. When the Japanese pilot was demonstrating one of the fighters he crash-landed and damaged it completely.

On 20 February 1935 a Kwangsi air mission headed by Lam Wai-hsing and consisting of General Lai Kuo-pei (Lai Kwok Pin, Head of the Aircraft Factory) and seven other officers left for Japan. By this time there was an Aviation Bureau, a Training Squadron, a Bombing Squadron and an Army Co-operation Squadron. There were 30 qualified Chinese officer pilots and 30 cadets. The aircraft inventory consisted of three AW 16s, three Atlases, four Wapitis, four Avro 637s, two Avro 626s, one Avro 621, two Avro Cadets, 24 Avians (of which 12 had been made locally), one Nakajima Army Type 91 and two Mitsubishi Army Type 92s. Another six Cadets and an example of the German Zögling glider were under construction at the factory. By August 1935 the factory had built a total of 15 Avians and eight Cadets.

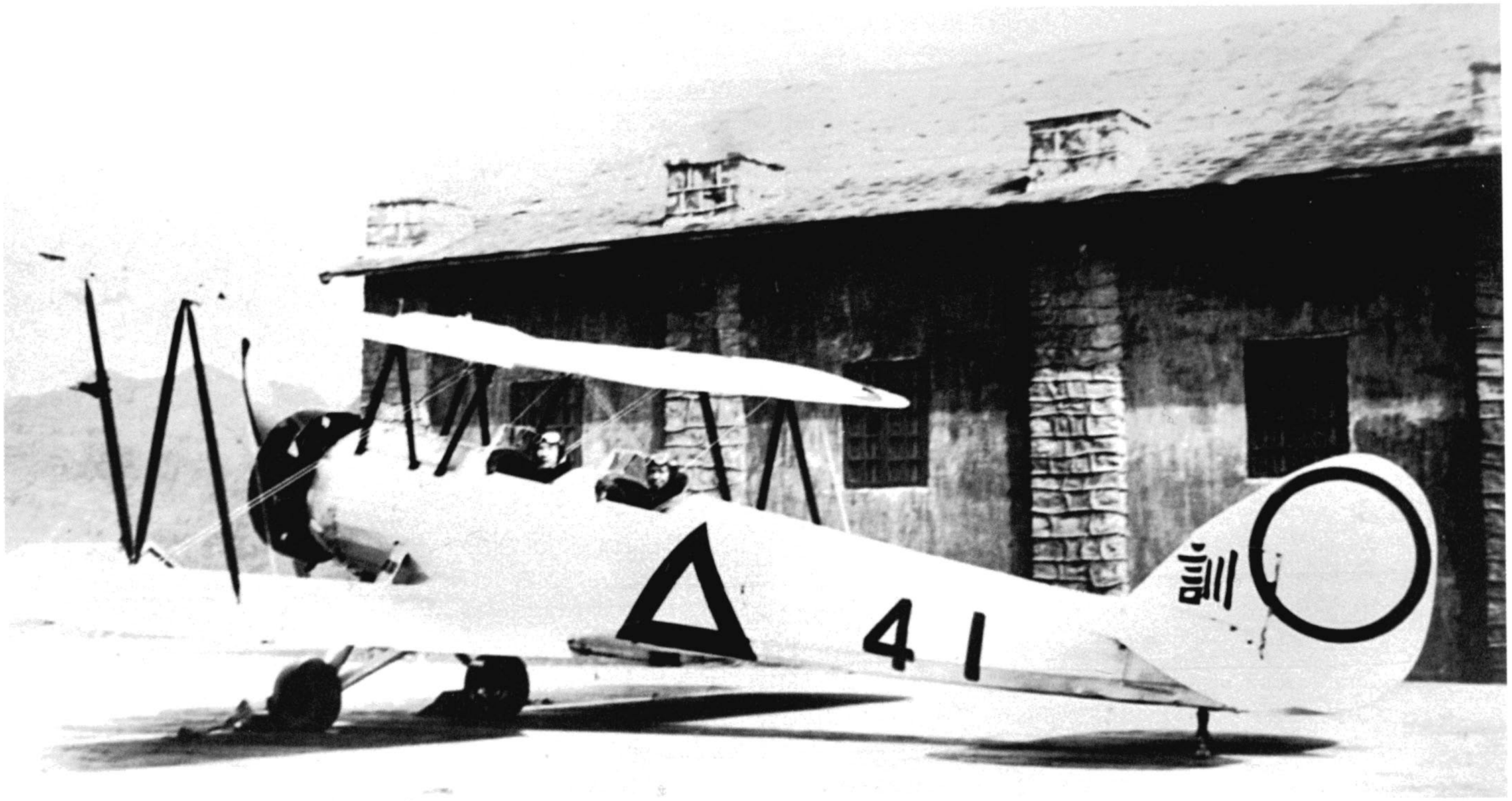
On 12 April General Lam Wai-hsing and Lai Kwok-pui arrived back from Japan. The Japanese had offered to supply Type 91 Fighter, Type 92 Observation, Type 88 Observation, Type 88 Bomber and licence-built Nieuport fighter aircraft. They also offered to send Japanese advisors to replace the British mission. G B Musson was hired until 31 December, factory engineer C L Hatton was to leave on 17 May but renewed his contract, wireless instructor E Hutchings was to stay until 17 October, and ground engineer D H Stevens was scheduled to stay for an indefinite period.

Aircraft from Japan

A total of 16 aircraft were purchased from Japanese Army Air Force stocks in 1935 and Wuchow aerodrome was closed in September to allow secret assembly. Eight Japanese arrived to assemble and test the aircraft and the first two flew to Liuchow early in December. One crashed before delivery and was probably written off. Initial reports mentioned 16 Nakajima Type 91 fighters. Ten Japanese-built Nieuport ND 29 (Army Type Ko 4) fighters had also been bought and were to be used for training. Later reports stated that



Three Westland Wapitis were delivered to Kwangsi in 1932.



Avro 631 s/n 41 of the Kwangsi Air Force. The character "Hsün" on the fin means "Instruction". (Wings of China)

18 Japanese fighters, including nine Nakajima Type 91s and nine old Nieuports, had been delivered. It is likely that some of the aircraft were in fact Mitsubishi Type 92s[2].

Seven Kwangsi aircraft under the command of Lieutenant Colonel Wu Yiu-liu and over 500 officers, cadets and other personnel of the Kwangsi Air Force visited Canton in September 1935 to take part in an aerial display held there.

The Kwangsi leaders had allowed no external interference in the affairs of the province, either from Nanking or from the neighbouring provinces. In May 1936 it was anticipated that Nanking should finally move against Canton and Kwangsi, and the two provinces started to prepare for war. The Kwangtung and Kwangsi forces were reorganised as the "Anti-Japanese National Salvation Army", commanded by Ch'en Chi-t'ang, Li Tsung-jen and Pai Ch'ung-hsi. On 7 June 1936 Kwangsi troops crossed the Hunan border "on their way to fight the Japanese". When Ch'en's power in Canton broke down in July, Nanking troops moved in and the Kwangsi troops withdrew into their home province again.

On 19 August Li Tsung-jen tried to set up a new anti-Nanking government at Nanning with himself as chairman, but on 4 September an agreement was reached with Nanking, which allowed Kwangsi to retain a certain amount of independence. Li Tsung-jen was permitted to remain in Kwangsi as Pacification Commissioner. The size of the Kwangsi Army was reduced and the Nanking troops evacuated the province. A new Provincial Government of Kwangsi was formally inaugurated on 1 October 1936 and the capital was removed from Nanning to Kweilin.

Up to July 1936 the Air Force had been controlled and commanded by Cantonese officers who held all the senior posts. On 15 August three Kwangsi trainers under Squadron Commander Cheng Tsz-sheung deserted for Canton and more would reportedly have followed if fuel had been available. On 16 August the deserters were ushered into the presence of Chiang Kai-shek and were awarded with a sum of money and commended on "their devotion to their coun-

Aircraft Used in Kwangsi

Type	Qty	Year	Notes
Avro 616 Avian	28	1932	Including 12 built locally. Total possibly 30.
Avro 621 Tutor	1	1932	
Westland Wapiti IV/VIII	4	1932	
Armstrong-Witworth AW 16	3	1932	
Armstrong-Witworth Atlas II	3	1932	
Saunders-Roe A.17 Cutty Sark	1	1932	
Avro 626	4-8	1932	Including 2-6 built locally
Captain Chee Parasol	1	1933	
Avro 637	6	1933	
Avro 631 Cadet	9	1934	All but one built locally
Nakajima Army Type 91-1	12(?)	1934	
Mitsubishi Army Type 92	4(?)	1934	
Nieuport ND 29 (Type Ko 4)	10	1935	
Airspeed AS-6J Envoy	2	1937	
Kwangsi Type 3	1	1937	

[2] Six Mitsubishi Type 92s were allegedly in service in 1937. The first two of this type had been delivered in September 1934. One source maintains that the Japanese aircraft purchased cheaply by Kwangsi had originally been ordered by the Fulien Government during the rebellion in November 1933, but had not been delivered there.

try". Kwangsi military police was called in to guard all aerodromes in order to prevent further defections.

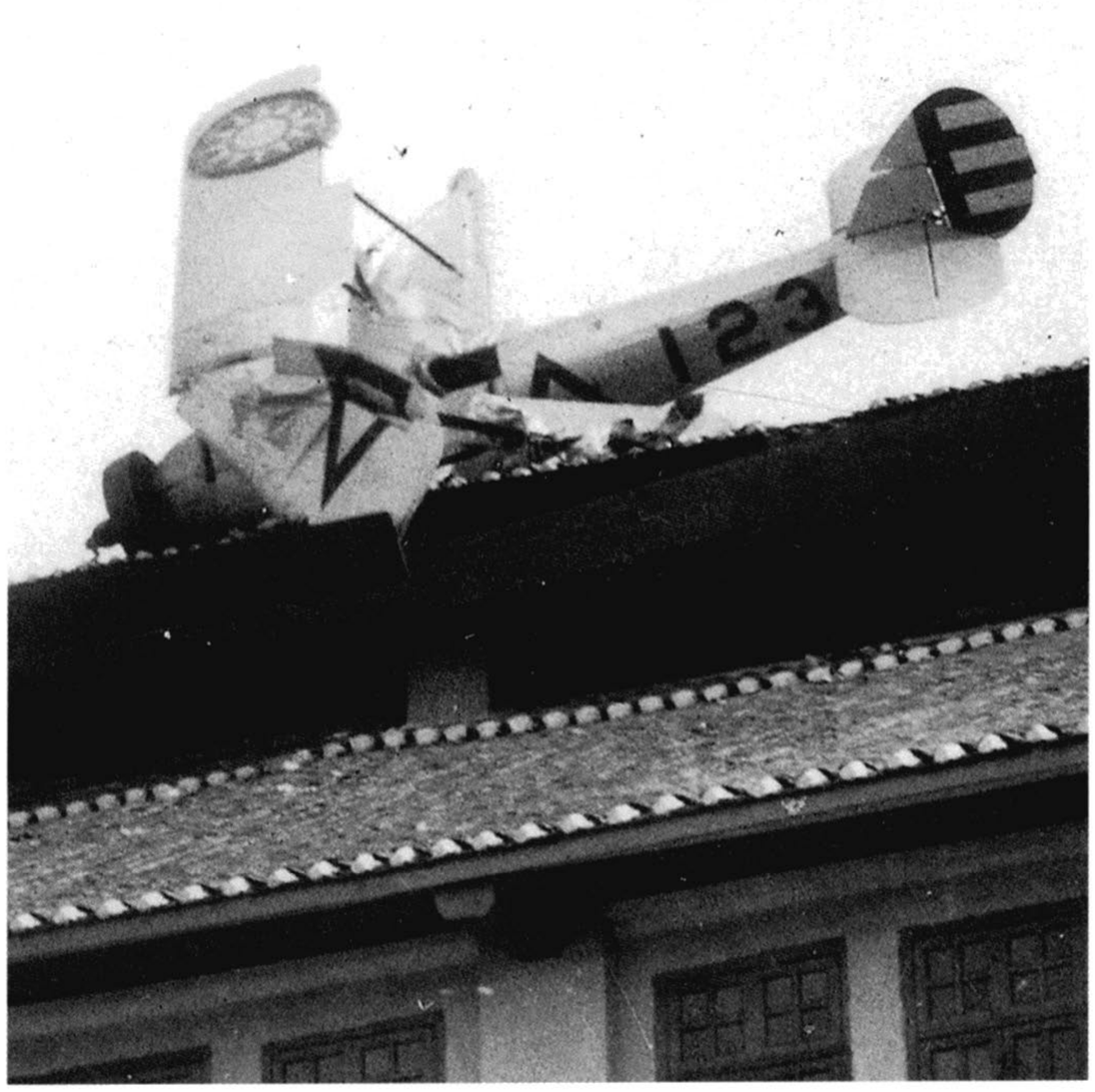
Kwangsi Air Force Commander-in-Chief Lam Wai-hsing managed to slip away, however, and deserted Nanning for Canton in mid-August in another aircraft. He had been summoned to Nanning by Generals Li and Pei to discuss a reorganisation of the Kwangsi Air Force and "the elimination of all doubtful elements". After attending to the conference he flew to Canton instead of going back to Liuchow. On 27 August Kwangtung (CAF) aircraft soared in formation over Kwangsi and pamphlets were dropped over Wuchow.

Despite these concurrencies, the Kwangsi Air Force remained independent and continued to acquire aircraft of their own. In the spring of 1937 a single-seat fighter biplane designed by Captain Chee at the Aircraft Factory, the Kwangsi Type 3, was completed and tested. The FEACo supplied two twin-engined Airspeed Envoy passenger transports and the first one was flown out in February 1937 and was intended for the personal use of General Li Tsung-jen at Kweilin. The second arrived in July and was to be used by the Commander of the Army.

The End

By July 1937 the Kwangsi Air Force consisted of headquarters at Liuchow, two service squadrons with five Nakajima Type 91 fighters, three AW 16s, six Mitsubishi Type 92s, two Atlas Mk IIs and two Wapitis, and the Flying Training School with nine Avro 637s and 626s, a single Avro 621, five locally built Avro Cadets, 18 Avians (including nine locally built) and nine Nieuport ND 29s. One squadron was based at Nanning and the other at Wong Min. There were approximately 60 service pilots and about 50 more under training. Flying, bombing, gunnery and formation flying was trained intensively.

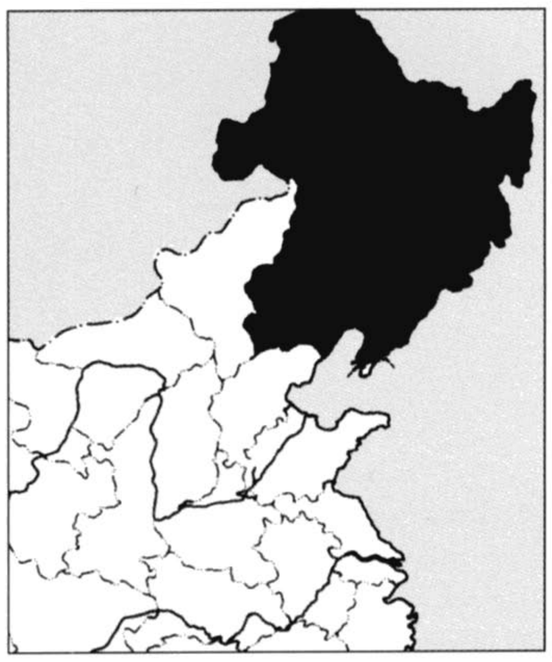
When the war with Japan started the Japanese refused to deliver further spare parts for the Japanese types in Kwangsi. The Aeronautical Affairs Commission in Nanking demanded an immediate take-over of the Kwangsi Air Force and the personnel were eager to go northwards and started preparing for war against Japan. Although some of the aircraft were attached to air units in Kwangtung, all aircraft and personnel were transferred to Central Government control in August 1937 and this put an end to independent military aviation in Kwangsi.



This Avro 631 (s/n 123) has had a mishap! (Wings of China)

A number of Japanese aircraft were acquired by Kwangsi in 1934-35, including old Nakajima Army Type Ko 4 Fighters (Nieuport ND 29C1). (Wings of China)

Manchuria (Fengtien)



The word Manchuria has often been used to emphasise the non-Chinese character of the three north-eastern provinces Fengtien (later Liaoning), Kirin and Heilungkiang. A perhaps more correct name would be The Three Eastern Provinces, but the name Manchuria will still be used throughout this section of the book for convenience. The city of Fengtien was renamed Shenyang in 1929. Mukden is the old Manchu name of the city and the name used in the West until 1949.

Bomb being loaded on a Caudron C 59.

The economic importance of Manchuria increased during the 1920s and in 1928 as much as 33 percent of China's foreign trade went through Manchurian ports. The major export product was soy. Warlord Chang Tso-lin became Military Governor of Fengtien province in 1916 and within three years he had extended his control over Kirin and Heilungkiang as well, and thus he became ruler of whole Manchuria. By 1925 he was the major power in North China and from 1926 his regime was located for a period in Peking.

Chang Tso-lin allied himself with the Chihli military faction and participated in the attack on the Anhwei (Tuan Ch'i-jui) in Peking in July 1920. On 19 July Tuan resigned and by 22 July the war was over. Chang occupied Peking and took over much of the military equipment found there. Some had to be shared with Chihli leader Ts'ao Kun at Paoting, however. Chang also took over the provinces Chahar, Jehol and Suiyüan.

Aviation

What was probably the first flight in Manchuria was accomplished on 25 July 1914 by American-trained Japanese aviator Takayuki Takasou, who successfully took to the air with his aircraft at Darien on that day. He flew the Takasou No 4, a modified Curtiss Pusher biplane with 60 hp Hall-Scott engine, which he also demonstrated in Seoul in Korea.

In March 1920 it had been reported that Chang Tso-lin had ordered six American aircraft, but nothing more was heard of this. The first aircraft taken to Mukden were almost certainly those captured at Nanyüan, near Peking, after the end of the war in July 1920. Vickers representatives in China at Peking reported on 7 October that 16 Avro 504K trainers and three Caudrons had been taken away. Another pair of Avros and two RAF SE.5A fighters were packed and ready to go, and three twin-engined Handley Page O/7 transports (or bombers) were being packed. The first eleven aircraft arrived in Mukden on the 5th. The rest arrived at the end of the month, but some had been damaged or destroyed en route. After lengthy discussions Chang agreed to return four of the Avro trainers to Nanyüan in November, but the other aircraft remained in Mukden.

An Aviation Department was established late in 1920 under General Ch'ao Keng-yun and an aerodrome was organised at Tung T'a, just outside the city. Construction started immediately and it was completed with two hangars in 1921. The Aviation Department moved from the city to the Agricultural College building early in 1921, but by

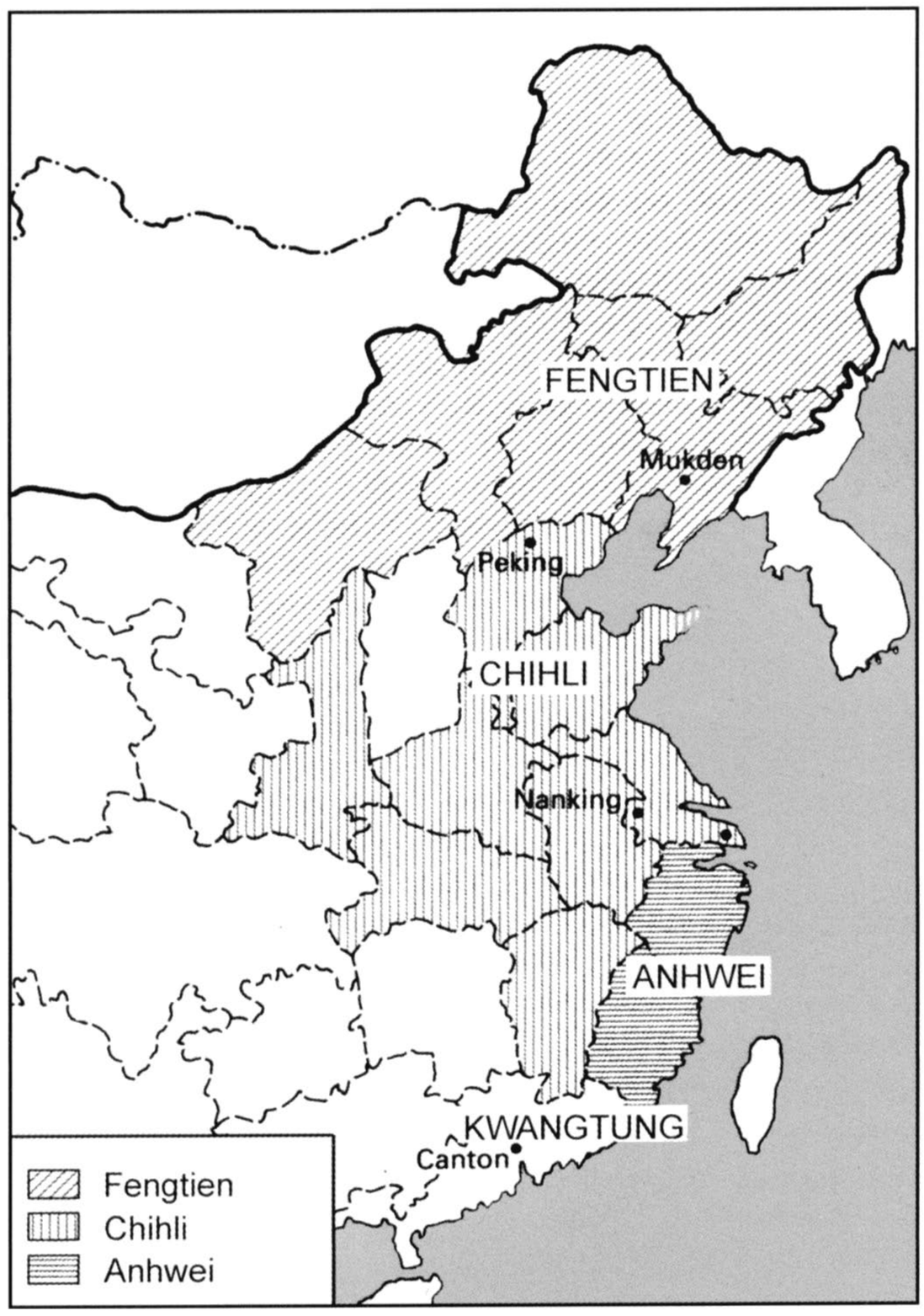
March none of the captured aircraft had been flown. The so-called North-Eastern Aviation Department was inaugurated on 1 April 1921, and reorganised as the North-Eastern Aviation Bureau in October 1922.

Pilots were taken from the Nanyüan school. Two aircraft were flown at the beginning of July 1921, but both had crashed within a week. A third went up on 12 September, but crashed the same day. Flying continued, for the time being with just a single machine, but all the seized machines had been taken from the store at the railway station to the aviation ground by the end of 1921. There were six Chinese pilots. In February 1922 a Training School under Ch'ao Keng-yun, the so-called 1st Class, was opened with 40 students and an instructor named Chao Hsiang-lu. The 1st Class was to graduate in 1924. The aircraft inventory at Mukden now consisted of three Handley Pages, two SE 5s, two Avros with 110 hp Le Rhone engines and twelve with the 100 hp Monosaupape.

The First Chih-Feng War in 1922

Chang hoped to extend his territory southward and growing hostility between him and the Chihli leaders Wu P'ei-fu and Ts'ao K'un soon led to a new war between Chang Tso-lin (and Chao Ti, in Honan) and Wu Pei-fu (Chihli, Honan, Hunan, Shensi and Hupeh). On 22 March 1922 Chang began to move his army into northern Chihli and on 10 April the main advance started. The principal engagements began on 28 April, but on 4 May the Manchurian army, which had occupied Peking, collapsed. Chang had counted in vain on Japanese support, which did not materialise, and instead Wu P'ei-fu moved into Peking. A cease-fire was agreed on 17 June, which allowed the defeated Chang to withdraw with his army to Mukden. No aircraft had been used for reconnaissance during the war, but a few bombing sorties had been made.

On 12 May 1922 Chang had declared the independence of the Three Eastern Provinces from the rest of China. The Mukden Arsenal had been set up in October 1921 and was soon renamed the Three Eastern Provinces Arsenal. It was



Participants in the First Fenh-Chi War.

greatly expanded after the 1922 war and new machinery was acquired from the Danish firm Nielsen & Winther. This equipment arrived in the summer of 1923 and a large amount of other war material was imported, despite of the Arms Embargo. British, Danish, German, Japanese, Russian and Swedish specialists were employed. Frank Sutton became head of the arsenal, which produced bombs and

Inspection of the Manchurian Air Force: A Breguet 14 with a Schreck FBA 17 amphibian in the background.

Line-up of Manchurian Air Force Breguet 14s.

bomb racks for aircraft, and H M Talbot-Lehmann acted as aeronautical adviser.

Early in the summer of 1922 Chang started to negotiate with the remnants of White Russian General Semenov's forces for the purchase of aircraft and arms that they had taken to Harbin in 1920. About 60,000 rifles, 5,000 bombs, grenades and a two-seat biplane built by the Russian aircraft designer Dil were finally purchased from the so-called Government of the Coastal Republic at Vladivostok. On 3 October 1922 15 cars reached Mukden with shells, 5,016 bombs, etc, and one aircraft with a 110 hp Le Rhone engine. Three White Russian aviation experts accompanied the shipment. Chang had originally agreed to hire one pilot to replace a Frenchman named Mars, but some ten Russians were apparently engaged. The aircraft built by Ivan Ivanovich Dil was fitted with a unique invention for altering the angels of incidence during flight.

In the summer of 1922 Captain W Mackenzie was engaged as instructor and he soon erected and flew one of the Handley Pages. An Avro 504K was destroyed in a crash at the end of September. When another British officer visited the aerodrome early in October he saw three Avros being used and was told that there were two or three more. He also saw the two SE.5As and the Russian-built Dil.

Two new Curtiss two-seat trainers with Hall-Scott engines arrived in May 1923. They had been purchased in Japan, where they had been built. At that time one Handley Page, four Avros and two SE.5As were serviceable. In July Chang bought three more aircraft built by the Russian designer Dil at Harbin, which were to be flown to Mukden by Russian pilots. One was powered by a 130 hp Clerget and the other two had 300 hp Salmon engines and all three were fitted with the special Dil feature, wings with variable angles of incidence.

French Equipment

Marshal Chang Hsüeh-liang, Chang Tso-lin's son, also known as "the Young Marshal", assumed the directorship of the North-Eastern Aviation Bureau on 4 September 1923. He was replaced late in 1924 by Ch'ou P'ei-ping, but remained the nominal head of the Air Force until 1931. Colonel S K Yao, who had learnt to fly in France in 1913, was called to Mukden in 1923 to become Chief of Staff and to organise the air force. Twelve flying students were sent to France in 1923.

By November 1923 there were two hangars, a repair shop, living quarters and a flying school at the aerodrome, which was situated about 1 1/2 miles east of the City Electric Light Plant, just beyond the arsenal. Chang Hsüeh-liang had under him about 15 non-flying officials. There were 17 pilots, 38 student pilots, 20 carpenters and 20 fitters. There were also three foreign pilots, one British (Captain Mackenzie, former Handley Page employee), one French and one Russian, a Russian observer and a Russian mechanic. The following aircraft were available: two Handley Page O/7s, two SE 5s, eight Avro, of which two were locally-built copies, two Curtiss and four Dils (two with 300 hp Salmson, one with 130 hp Clerget and one old model). MacKenzie had imported a modern bombsight from England, but Chang refused to purchase it.

Aided by Capitaine Roques, the French military attaché and later aviation attaché to Peking, S K Yao ordered 12 Breguet 14s (five Breguet 14A2 reconnaissance aircraft, five 14Bn2 bombers and two 14T passenger transports[1]) and six Caudron C 59 trainers from Boixo Frères. The twelve Breguets arrived from Antwerp via Kobe on board the "Amur Maru" and were landed at Newchwang on 28 or 29 November 1923. All were equipped with machine gun fittings and bomb racks. They were brought up from Tientsin to Mukden in February 1924 and the six Caudrons arrived in January.

An Avro 504K collapsed in the air and crashed, killing the Russian pilot in January 1924. Chang now engaged four French pilots, including Etienne Poulet and Masse[2], and four mechanics to work with the French equipment. Masse was the first to arrive. A flying school was organised under Yao with Poulet and Masse and a few Chinese instructors. The French aircraft were formed into three squadrons together with the old British aircraft. On 4 March Chang Hsüeh-liang flew from Mukden to Newchwang to try out a direction finding wireless station put up near the Mukden Arsenal.

By April 1924 there were 35 aircraft at Mukden aerodrome. The two Handley Page O/7s were flown regularly, but the third machine of this type had crashed at Shanhaikuan in 1922. Two SE.5As and seven Avro 504Ks were also in constant use. One of the two Curtiss trainers obtained from Japan crashed in April 1924. Only the first Dil acquired was considered to be of any use, but it was not flown. There were six Caudron C 59s. Only about half of the 12 Breguets had been unpacked and fitted with bomb racks and machine guns. Captain Mackenzie was scheduled to remain until 31 August 1924. There were seven Russian pilots, one machine gun expert and three mechanics, and three French pilots, of which two had arrived recently. There were 12 trained Chinese pilots and another 12 under Colonel Wei were sent to the Centres Richard at Angers in France for training.

Late in 1923 the Swiss firm Comte got an order from a Chinese officer who had received flying instruction at

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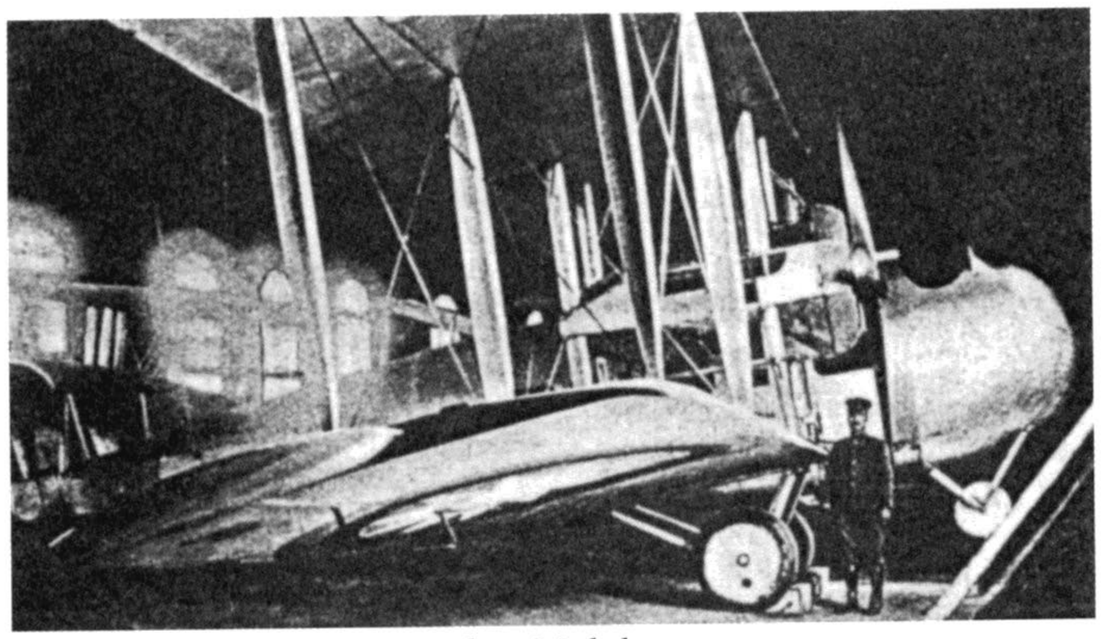
[1] A first report stated that there were two Breguet 14A2s, four 14B2s, four Bn2s and two 14Ts, but this was later amended.

[2] Masse was previously engaged in Peking.



A Vickers Vimy Commercial at Mukden.

Dübendorf. He had obtained a pilot's licence after spending two years at the Comte flying school. Comte was to overhaul, recondition and assemble three Fokker D VII single-seat fighters, three Hanriot H.32 two-seat trainers and two Lohner R flying boats. All aircraft were old. The Fokkers and Hanriots had been picked up in France and Belgium, and the Lohners had previously been on the Swiss civil aircraft register (CH61 and CH64). The aircraft were formally sold to the father of the flying student, who acted as a front for Chang Tso-lin, and arrived at Newchwang in July 1924.

In August 1924 the French journal "l'Aeronautique" reported that there were 12 Breguet 14A2s and 16 Breguet Bn2s and limousines at Mukden. The increase from the original 12 Breguets tallies with a report saying that Chang purchased 18 aircraft from a French firm at Tientsin early in the year that were to be transported to Yingkow. The "l'Aeronautique" article continues to mention that the delivery of three Schreck FBA amphibians, ten 130-hp Clerget engines and other equipment (delivered by the Aera firm) was expected shortly. FBA pilot Jean-Fernand Laporte was sent out by Schreck on 27 August to deliver six Schreck FBA 17 amphibians and one FBA 17 flying boat trainer.

A total of 70 Breguet 19s was said to have been ordered in April 1924 and there was also rumours about an order for 30 Caudron G 3s, but this information seems to have been in error.

Early in September 1924 a new very large (240 x 23 m) hangar constructed by the Russian merchant Skidelsky at Mukden was completed. An aircraft factory had been established as well. Mackenzie had recently left, but the two French instructors were still there and about ten Russians were employed. After the Manchurian Army was reorganised in 1923 it started to receive Japanese assistance and military advisers and in 1924 a number of Japanese officers, including Colonel Matsui and a few other flying officers, were engaged in that capacity.

The Second Chih-Feng War of 1924

In September 1924 the Second Chih-Feng War broke out. Wu P'ei-fu had mobilised the Chihli Army and supported by Feng Yü-hsiang he now attacked Manchuria. Chang Tso-lin had interrupted railway communications between Peking and Mukden on 13 September. An aviation base had recently been established at Chinchow, south-west of Mukden on the Mukden-Shanhaikwan railway, and a hangar had been erected and three aircraft had been sent there early in September.

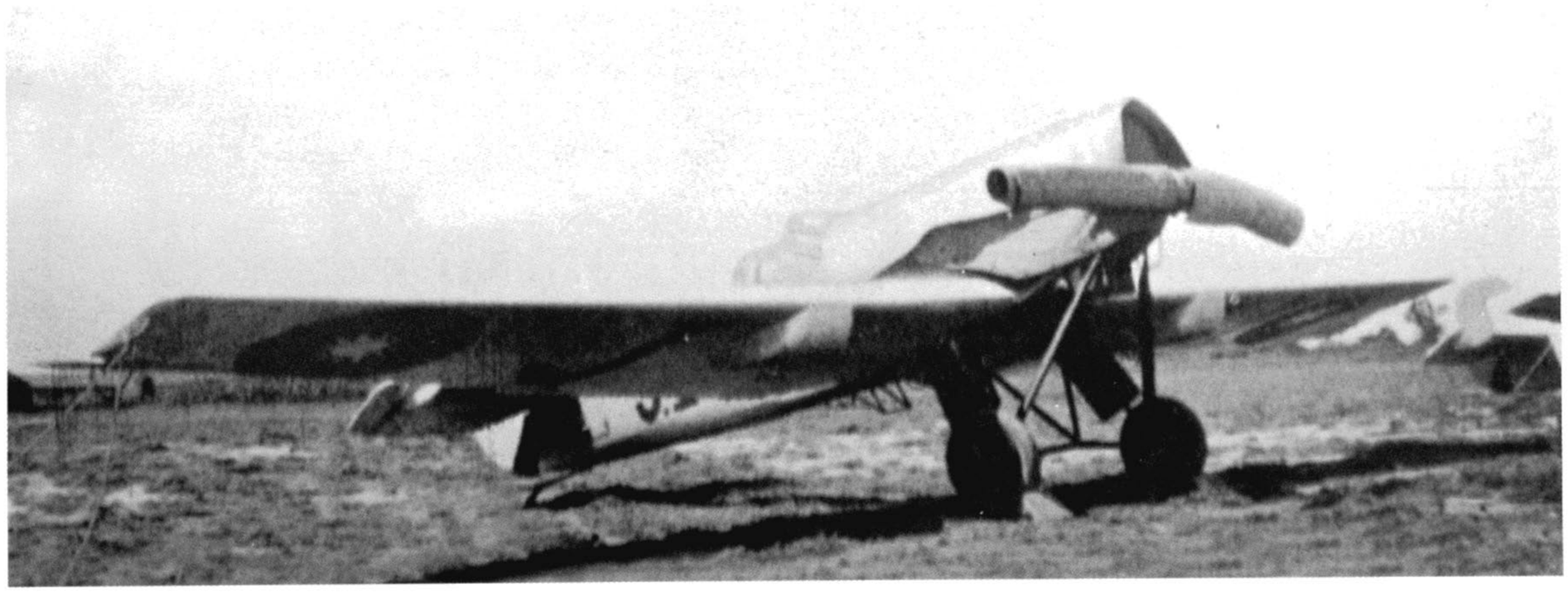
Wu's troops reached Peking on the 17th, but on 22 October Wu's ally, Feng Yü-hsiang, suddenly occupied Peking and this change of sides put an end to the war. Ts'ao K'un was imprisoned and Feng issued orders that Wu be dismissed and all hostilities immediately halted. The Chihli forces collapsed and by the end of the month most of the war was over, although it continued for some time in Honan. Chang quickly expanded his influence down through the eastern provinces along the Chinese coast. Very little is known about the use of aircraft during the war but a Handley Page was damaged and had to be repaired later.

Large orders were placed by Chang Tso-lin for French aircraft just before and during the war in 1924: 40 Breguets, 10 Caudron C 59s, 10 Caudron G 3s and 20 Schreck amphibians[3]. SS "Chantilly" arrived at Darien early in October with 18 French aircraft consigned to Godard, Newchwang, and a number of machine-guns. "Ruth Kayser" passed Shanghai with two boxes marked "MM Boixo Frères Pekin Port Newchoang Hydroavion FBA Louis Schreck". Schreck supplied a total of 36 (or 38) FBA 17 and FBA 19 amphibians through Boixo Frères in 1924-25. On 6 April 1925 15 aircraft without engines arrived at Darien with SS "RC Rickmers". In May 1925 another 22 aircraft were shipped via Antwerp to Newchwang and in June 20 aircraft, also consigned to Boixo, Newchwang, were shipped on SS "Malaya". British intelligence reported on 26 June that 14 Caudron C 59s, 40 Breguet 14s and 31 Schreck FBA 17s and FBA 19s had arrived or were arriving.

Two Ansaldo A.300-4s that had been ordered for the Paoting-based air force of Ts'ao K'un arrived only after the end of the Chih-Feng War in October 1924 and were seized by Chang Tso-lin. By April 1925 the foreign personnel at Mukden included French instructors Poulet and Masse, two Japanese flying instructors and three Russians employed for making propellers. The Manchurian Air Force was expanded from three to five squadrons. The students sent to France in 1923 returned, and the flying school, which had closed during the 1924 war, opened again with 20 students, the so-called 2nd Class.

An American intelligence report dated 30 June 1925 gives the following information on the Manchurian Air Force. The Mukden aerodrome near the Arsenal had two hangars and a modest repair shop. There was a pilot and mechanic school. Chang Hsüeh-liang was the nominal head of the air force and had about 15 non-flying assistants. Colonel

[3] Early in 1925 British intelligence reported that 105 aircraft had been bought from Boixo Frères, including 38 seaplanes. An American intelligence report dated 23.4.1925 stated that 40 Caudrons (80 hp Le Rhone and 130 hp Clerget), 40 Breguets (300 hp Renault) and 36 Schreck FBAs (180 and 300 hp Hispano-Suiza) were on order. By that time all Caudrons had arrived and 15 Breguets were expected shortly.



Junkers K 53s were taken over from Shantung and incorporated into the Manchurian Air Force.

Hsin is mentioned as Director. Poulet was still engaged and only one Russian pilot, O B(o)charoff, is mentioned. There were 17 Chinese pilots and 30 student pilots.

About 50 aircraft were stored in boxes and 17 were in the repair shops. One hangar contained three Avro 504Ks under construction, five complete Avros, six Caudrons, a "Spad" (said to be one of 37 aircraft captured from the Chihli in 1924), a Breguet, two "Martin bombers" (Handley Pages) and 10 "Caudron CC" (almost certainly Caudron G 3s). The second hangar contained 17 Breguets and two "Vimy Amphibians fitted to drop bombs" (Schreck FBAs or Vickers Vimys). Some Caudrons and Avros were flying. It was planned to move the Aviation Department to Feiling, north of the city, in 1926.

Summing up, the following aircraft were ready for use: six Caudron "C 60" (C 59!), ten Caudron "CC", 12 (or 18) Breguet 14s, two Breguet 14Tbis, five Breguet Bn2s, five Breguet 14A2s, one "Breguet reconnaissance aircraft", two Handley Pages (fitted with racks for 700 lb bombs), two SE.5As, seven Avro 504Ks, three Avro 504Ks under construction, five Avro 504Ks being re-constructed/ assembled, one "Spad", two Lohner flying boats and two "British Vimy Amphibians". The majority of the 37 aircraft captured in 1924 were unserviceable, as were two Fokker D VIIs, two Curtiss trainers (one crashed) and four Dils[4].

The number of foreign advisers and instructors changed constantly. Early in 1925 there were eight Russians at Mukden. General D E Swinehart, Chief Adviser to Chang Tso-lin, said that there were six French pilots from 1925. By 1926 Etienne Poulet was attached to the staff of Chang Tso-lin as aviation adviser, and there were four Russian instructors and one Japanese.

The War of 1925-26

In October 1925 the Manchurian Army had grown to 350,000 soldiers, but on 22 November Kuo Sung-ling, one of Chang's commanders, rebelled with the best part of the army and started to move from Tientsin and Shanhaikuan towards Mukden. By mid-December his soldiers started to desert, however, and on 23 December the rebellion was crushed. In the meantime Feng Yü-hsiang and the KMC had attacked Chang's army at Tientsin. Wu P'ei-fu joined in on the Manchurian side this time, which was also supported by Chang's ally Chang Tsung-ch'ang in Shantung. Very little is known about the actual use of air power during the conflict.

The war with Feng Yü-hsiang and the KMC ended successfully for Chang Tso-lin, Wu P'ei-fu and Chang Tsung-ch'ang. Tientsin was re-taken on 21 March 1926. On 2 April the Manchurian Air Force began to bomb Peking[5] and on 16 April the Manchurian troops took the city. They continued to fight the KMC and managed to drive them out of their previous headquarters at Kalgan and occupied Chahar in August the same year. Four Breguet 14s and two or three Caudron C 59s were captured by Sun Ch'uan-fang, the warlord of Kiangsu (Nanking), from the Manchurian armies in Kiangsu in October and November 1925. On the other hand it seems that the Manchurian Air Force received an infusion of captured aircraft as well. This probably included a few R-1s (DH.9A copies) taken from the KMC.

In May 1926 Colonel Liu Kuang-kuo, Chief of the Aeronautical Department of the Fengtien Army, was appointed Chief of the Aeronautical Bureau at Nanyüan[6]. Boixo Frères repaired Pelletier D'Oisy's Breguet 19A2, which had crashed near Shanghai during his Paris-Tokyo flight in 1924, and presented it to Chang Tso-lin in June 1926. Eight (or ten) more of the same type were allegedly ordered, but for some reason never delivered. On 22 May 1926 five Avros, five Schreck FBAs, one Vimy and four "large French aircraft" were destroyed when a shed on the Mukden aerodrome burnt down.

There were three French pilots and one engineer at Mukden in 1926, of which two of the pilots and the engineer had arrived during that summer. There were also eight Russian pilots and seven mechanics, and a pilot and an observer

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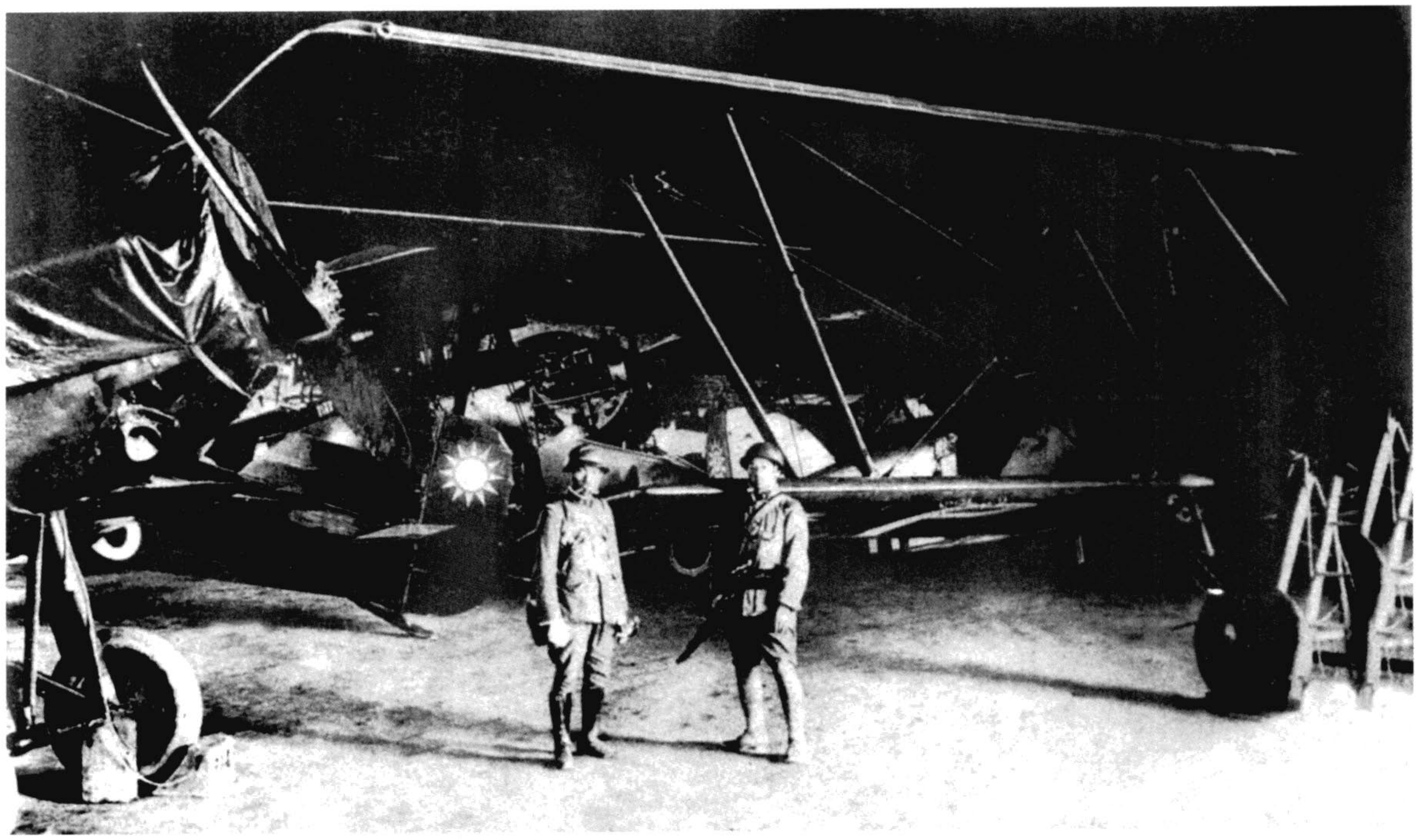
[4] Another American report, dated 29.4.1926, on aircraft at Mukden "in 1925" listed the following: 14 Breguets, 5 Schreck FBAs, 2 Fokker D VIIs, 2 Handley Pages, 6 Vimys, 2 SE 5s, 6 Avros, 9 Caudron C 59s, 8 Caudron CCs, 2 Potez trainers, (40) new Breguets and Caudrons, 10 Vickers VIMs and 1 Nieuport. Twelve three-engined Farmans were on order but had not been delivered. In addition there were 20 Breguets at Chinchow and 6 Schrecks at Hulutao. This is the only known reference to a Farman order.

[5] An American intelligence report stated that only small bombs were dropped and that only about 25 per cent exploded.

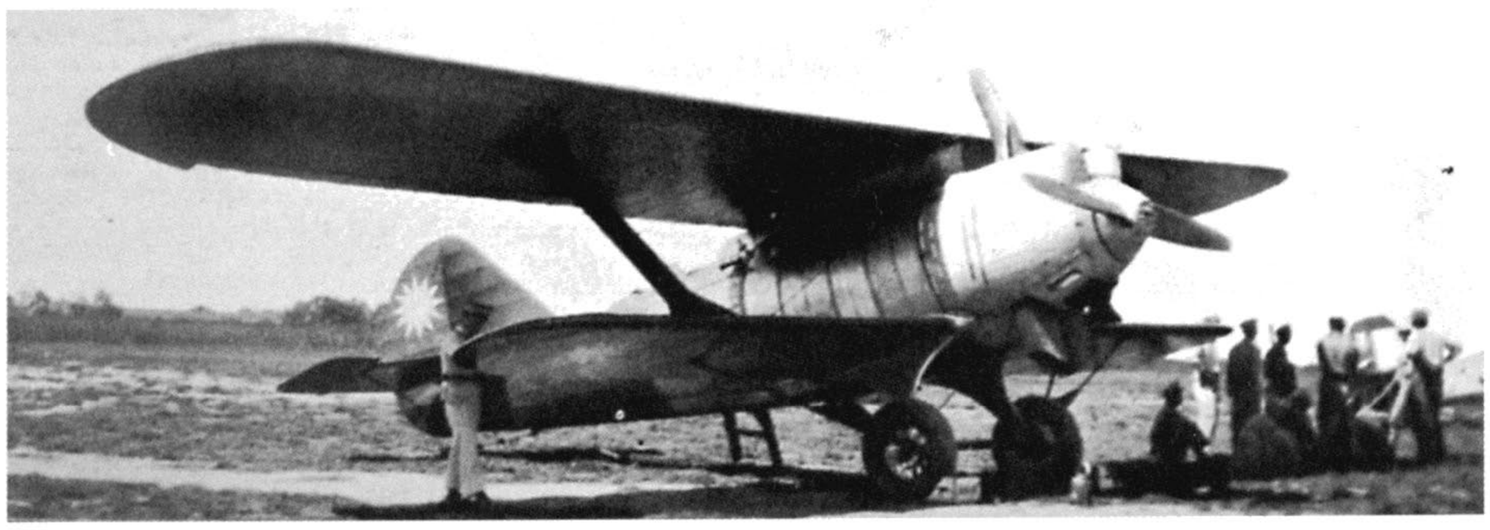
[6] In April 1926 Ma Fu-hsiang was appointed Director of the Peking Aeronautical Bureau, but he probably never took office. General Ch'ou Pei-ping was still head at Mukden.



French types were frequent in the Manchurian Air Force.

Top: Potez 25s.

Below: The single Breguet 19GR.



from Japan. In addition the German engineer E O Fuetterer worked in the Aviation Department. A second lot of 30 pupils was sent to France for training at the Caudron and Morane schools under the supervision of General Yao, by that time Chinese military attaché in Paris. The 2nd Class was graduated in Mukden and four students were selected from this class and sent to Japan to study observation. In 1927 the students sent to France in 1925 returned and in 1928 the four sent to Japan returned and became instructors.

A number of the French aircraft delivered in 1924-25 had in fact never been handed over due to lacking payments. They had been stored and had later been sold to other provinces with the help of Chang Hsüeh-liang, some to Shantung and Shansi. Fuetterer offered German aircraft types, including Heinkels, but no new orders were placed. A German firm at Tientsin offered the Focke-Wulf A 16 as bomber in 1927. In March the same year Vickers filed an application for a licence to export ten trainers with photographic equipment[7] to Chang Tso-lin, but with reference to the Arms Embargo this was not granted.

Several attempts were made to start local production of aircraft at Mukden. Early in December 1926 Boixo Frères had got an order for the construction under licence of 20 Caudron C.127 trainers. Production started with Russian personnel under the direction of a German named Brinkmann, wood was imported from Japan and instruments and engines from France. The first machine was due to be tested in the spring of 1927, but in the event none of the Caudrons were ever completed.

War with Nanking

The purpose of Chiang Kai-shek's Northern Expedition of 1926 was to destroy the northern warlords, including Chang Tso-lin. When the NRA forced warlord Sun Ch'uan-fang to evacuate Nanchang on 9 November 1926 he immediately asked Chang Tso-lin and Chang Tsung-ch'ang for help. The three warlords agreed to recognise Chang Tso-lin as Commander-in-Chief of the so-called Ankuochün (National Pacification Army) and an army of 60,000 Manchurian and Shantung troops was sent to Shanghai. Fighting continued until the NRA took Shanghai and Nanking in March 1927. The Ankuochün's offensive had reached the Yangtse, but in May 1927 an NRA attack across the river forced the Ankuochün to withdraw toward Shantung.

According to a British intelligence report "correct to 28.3.27" the Manchurian Air Force had one Breguet 19A2, 28 Breguet 14A2s, two Breguet 14A2s with Lorraine engines, a Salmson 2A2, six Vickers Vimys, ten Caudron C 59s, three Fokker D VIIs, three Hanriot H 32s, seven Avro 504Ks, two SE.5As, a Handley Page, a Morane Parasol, two DH.9Aa, two Ansaldo A.400-4s, five Schreck FBA 17s and 20 Schreck FBA 19s at Ch'ingho, Chinchow and in Honan. If the report is correct, the Morane and the DH.9As, which were not mentioned earlier, could have been aircraft captured from other warlords. The DH.9As (R-1s) were probably taken from the KMC at Kalgan. The "Salmson"

[7] The Vickers Vendance II is a possible candidate.

mentioned could perhaps be a mistake for the Salmson-engined Dil.

Another report credits the Manchurian Air Force with about 112 aircraft, of which half were serviceable in March 1927. About 17 had been sent to other warlords fighting against the NRA. The last new machine delivered to Mukden was the Breguet 19A2 mentioned earlier. Chang Hsüeh-liang and General Ch'ou headed a force consisting of a headquarters, a training unit and five squadrons with 6-12 aircraft each. 100-lb bombs were usually carried on the Breguets but a bomb weighing over 500 lbs had been made for the Vimy. A supply of Italian 200-lb bombs had been obtained about 1925, but all bombs were later made at the Mukden Arsenal.

There were three French pilots and two mechanics, six Russian and two Japanese pilots and the number of Chinese pilots had reached 60, of whom 44 had been trained in France. There were 25 more who could only fly Avro trainers. There were aerodromes at Mukden and at Ch'ingho near Peking. The seaplane squadron at Hulutao had been split up: One squadron had been sent to Shantung (Tsingtao) and one to the Honan front with a few Russian pilots.

Efforts were made to put the Avro 504K in production at Mukden and in Peking, but the few examples completed were probably made from parts imported in 1919-20, at least to a certain extent. Fuetterer tried to get the workshops at Mukden in shape to produce aircraft, but without much success. A few Avro 504Ks were completed about March 1927, but due to problems with structural strength they could not be used for advanced flying and production was soon halted.

A new Aviation Department (Hang K'ung Pu), within the Ministry of Military Affairs, was established in Peking by Chang Tso-lin in June 1927, but this body had no practical function. The five squadrons were known as the "Eagle", "Phoenix", "Tiger", "Leopard" and "Dragon" Squadron. At Mukden there were one new brick and wood hangar, two old brick hangars and four workshops, mainly for repair. At Chinchow, 150 miles south-west of Mukden, there was one hangar at the aerodrome 4 miles east of the city. There was also an aerodrome 5 miles south of Tientsin, but there were no hangars at this place.

The NRA's advance northwards continued during 1927 and 1928. At the end of 1927 Shansi warlord Yen Shi-han attacked Manchuria. The "Dragon" Squadron was based at Ch'ingho, Peking, and used the big hangar there. It had one Breguet 19 and five Breguet 14s, equipped with bomb racks, but with no fittings for machine guns. There were seven pilots, including three Russians, and a Russian commander. They flew reconnaissance missions against Kalgan and bombed Taiyüan in Shansi a number of times and Chochow was bombed frequently as well.

Another Manchurian Air Force squadron consisting of two Vimys, three Breguets, two Caudrons and an Ansaldo was ordered to Paoting. British adviser Talbot-Lehmann resigned when being ordered to fly bombing missions against the enemy. For some reason all personnel stationed at Peking, Tsingtao, Tsinan, Tatung and Paoting were recalled and replaced by new personnel from Mukden in March. Most of those recalled were sent out to the front again in May, however.

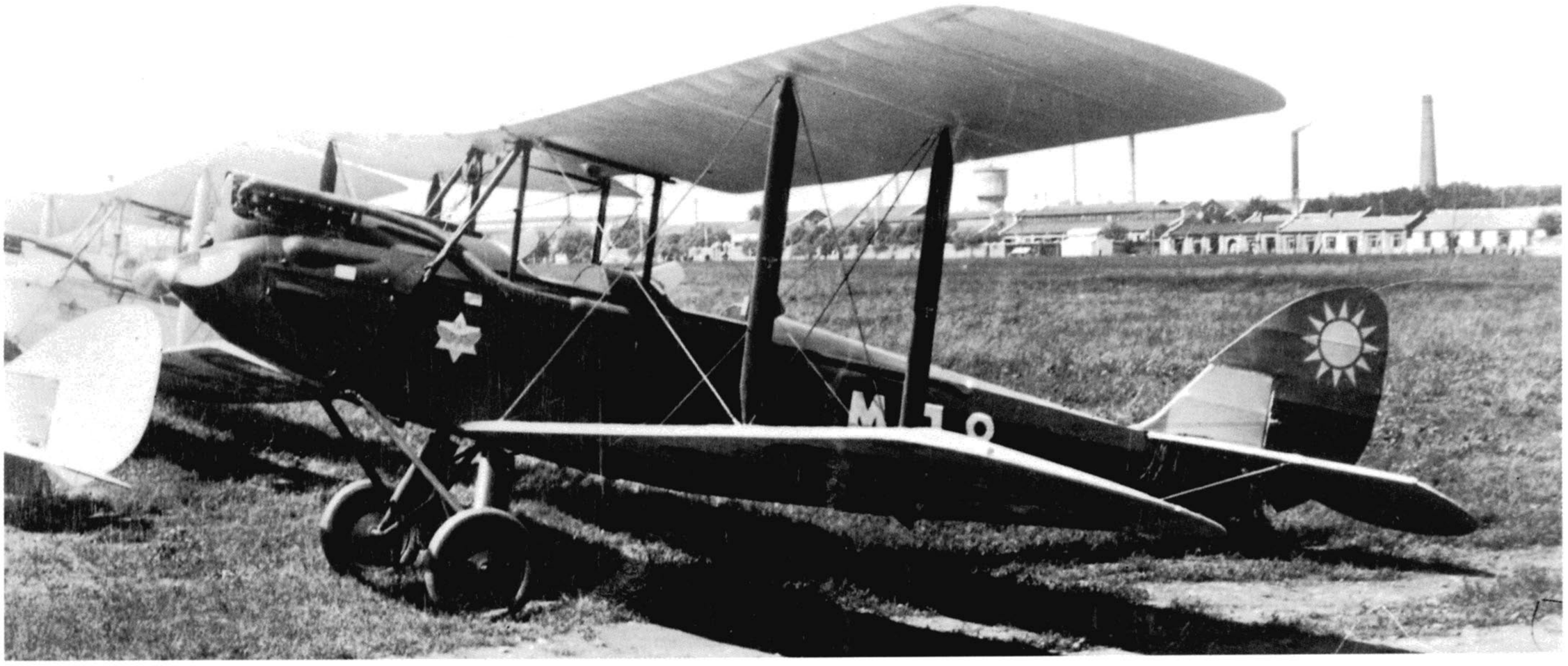
Supported by Feng Yü-hsiang attacking from Honan, the 1st Army Group of the NRA advanced into Shantung and when they cut the railway line between Tsinan and Tsingtao, the Ankuochün units evacuated Tsinan and Shantung. At the end of April 1928 most of the Shantung Air Force was brought to Mukden by General Nieh Heng-yü and incorporated into the Manchurian Air Force. Six Junkers K 53s, two Udet U 12 Flamingos, three Breguet 14A2s, one Caudron C.59, one Avro 504K, five Potez VIIIs, one Heinkel HD 24, one Vickers VIM and one Oster had been at Tsinan, but it is not known if all reached Mukden. The Oster, which had never flown, was certainly left where it was.

On 9 May Chang Tso-lin concentrated his armies at Techou, Paoting and Kalgan to defend the railway lines leading to Peking. He finally decided to evacuate Peking, however, and return to Manchuria. As Chang's train passed a bridge of the Japanese-owned railway south of Mukden on 4 June 1928 explosive charges detonated and Chang was killed. The Manchurian army left for Mukden

Manchurian Air Force 1930

In February 1930 a French intelligence officer submitted a comprehensive report on the Manchurian Air Force. Numbers within brackets are "quantity originally delivered", but these numbers are suspect. He wrote that four or five Caudron C 59s (10), eight or nine Breguet 14A2s (10 with Renault and 10 with Lorraine engines) and six to seven Schreck FBAs (15 with 180 hp and 5 with 300 hp Hispano-Suiza) were serviceable. An additional six FBAs were in the hands of Admiral Shen, Commander of the Manchurian Navy, and based at Tsingtao. Nine or ten of the 20 Potez 25A2s remained serviceable.

Pelletier Doisy's Breguet 19A2 had been damaged by a Russian pilot and repaired, but was not serviceable. The Breguet Bidon purchased from Arrachat and Rignot was said to be "absolutely useless here". There were seven new but unarmed Junkers K 53 (ex-Shantung), three Ansaldos and two Vimys, of which one had been destroyed by fire in December 1929. There were also 8-10 spare 300 hp Renault engines and 40 300 hp Rolls-Royce engines. A consignment of 10 French machine-guns delivered by Chao (Geo) had arrived two months earlier. Commander was Colonel Hsu, a former mechanic trained in France in 1924. Poulet, formerly in charge of the Pilot's School, was now adviser and Chang Hsüeh-liang's private pilot, and there were two French mechanics, one from Potez and one from the Hanriot School. The Russians included pilots Lykin (Likin or Leikin) and Poidenevnsky, observer Kulibyakin and mechanic Menkovsky.



De Havilland DH 60 Gipsy Moth s/n M.18. A total of 26 were acquired.

and a few days later Chiang Kai-shek's troops reached Peking.

Independence Lost

Chang's son, Chang Hsüeh-liang, took over as leader of Manchuria and decided to join the former enemy. The blue-red KMT national flag with the 12-pointed star replaced the old five-coloured flag and new aircraft national insignia were introduced. On 30 December 1928 the Manchurian Army was renamed the North-Eastern Border Defence Army and the Fengtien Air Force became the North-Eastern Air Force.

The last batch of four Junkers K 53s ordered by Chang Tsung-ch'ang had left Sweden on board the "Bestik" in May 1928. The ship went to Hulutao, but was not allowed to enter port there and finally arrived at Newchwang on 27 July. With the four new K 53s the "Junkers fleet" at Mukden amounted to ten aircraft. Initially only one was used for training flights, however, because of lack of spare parts.

An American report dated 29 September 1928 provides the following information on aviation at Mukden as of 1 July 1928. The Aviation Department (Hang K'ung Pu) was one of four departments of the Ministry for Military Affairs (Chün Shih Pu) of the Fengtien Government. It was essentially the same as the one established by Chang Tso-lin in Peking in June 1927, which had been removed to Mukden. The Fengtien Air Force had three composite squadrons at Mukden and one seaplane squadron at Newchwang (Yingk'ou). One French and one Japanese instructor and six or seven Russians were employed. Chang Hsüeh-liang was Commander-in-Chief and Colonel T H Chow was engineering officer. The following aircraft were at Mukden on 31 July 1928: seven Schreck FBA 17s, one Salmson trainer[8], six Avros, four Caudrons, 26 Breguet 14s, five Hanriot trainers[9], one ex-Shantung Junkers, five Vimys, a Spad fighter and a Handley Page.

New equipment was needed. Junkers offered to deliver a single W 33 with option for another 40 in 1928, but the Potez 25A2 was chosen instead. Aided by the French Military Attaché, Capitaine Roques, French instructor Poulet placed the order for Potez 25s in Peking in 1928[10]. The first three were reloaded in Shanghai and arrived early in March 1928 at Tientsin, and the first five of an (additional?) order for twenty reached Newchwang in September-October 1928. Machines belonging to the 20-aircraft batch arrived in 1928 and 1929 and were all unarmed. They were accompanied by Potez company pilot Francois de Remmert and mechanic Paillez, who assembled and test flew them. Three crashed at Mukden during the conversion training period[11].

In 1929 Capitaine Arrachart and Commandante Rignot made a demonstration flight to Mukden in a Breguet 19GR Bidon and arrived there on 22 August. Although it was fitted out as a special long-distance version, Chang later bought their aircraft for the Manchurian Air Force. Four additional Schreck FBA 17s were purchased at an auction in Saigon from the Compagnie Aérienne Francaise d'Extrême-Orient in the summer 1929. General Fung Yung constructed a private aerodrome near the Fung Yung University in

[8] This aircraft was stated to have a 180 Hispano Suiza engine. As there were no Salmsons with that engine it can be assumed that this is machine was misidentified.

[9] This type, with the 180 hp Hispano Suiza engine, is also an enigma. The three Hanriots imported from Switzerland had another type of engine.

[10] The order was placed through the intermediary of "Chao" (probably T H Chow), former engineer of l'Ecole Centrale, Paris, who called himself Geo in France.

[11] The total number of Potez 25s acquired was reported to be 25, which would include the three first purchased in 1928, the 20-aircraft order delivered in 1928-29 and a final two delivered in 1930 (see later).

Aircraft sent to Mukden and Peking for demonstrations and evaluation in 1930-31

Type	Identity	Fate
Fairey IIIF	G-AABY/F.1129	Crashed, later returned to manufacturer
Letov S.131		Probably returned to manufacturer
Avia Ba.33	1020	Taken by the Japanese
Dewoitine D.27		Purchased
Ford Tri-Motor	NC-406H/5-AT-65	Purchased
Blackburn Lincock III		Later sold to Nanking
Avro 621	464	To Nanking
Waco MNF	NC11213/3408	Possibly taken by the Japanese
Caudron (C.140?)		Unknown
Fokker D XVI	5245	Taken by the Japanese (to Manchukuo)
Fokker C VE	5288	Taken by the Japanese (to Manchukuo)

Mukden and for his own use he acquired a single-engined Potez 32 limousine through the Tientsin Central Garage. This aircraft arrived in Mukden in November 1929 and was often flown by pilot Nieh Heng-yü.

War with the USSR

Chang had started a campaign to drive the Russians out of the joint Chinese Eastern Railway administration and this soon led to armed conflict. Between 2 October and 29 November 1929 a small-scale war was fought along the railway line between the Soviet Far Eastern Army and Manchuria. The Russians committed some 70 aircraft, including R-1s and Fokker D XI fighters. MR-1 floatplanes based on the Amur River also participated and managed on 31 October to sink the gunboat "Chiang Sheng".

Manchurian Air Force aircraft, including eleven Potez 25s, were moved to Suifenho, near the eastern border, and Manchouli in the north-west to take part in the fighting against the Soviet Union. Five Potez 25s were sent to Suifenho and six to Manchouli. Two of them were lost on the way, however, when they crashed near Changchun (Hsinking). The Potez 25s were still unarmed and were eventually not used at the front. Four of those at Suifenho were destroyed by Soviet aircraft, which bombed and strafed them. Russian bombing was also reported to have damaged some of the Manchurian Junkers aircraft.

The Manchurian Air Force had retained an organisation of five squadrons for a number of years, but after the fighting with the USSR in 1929 a reorganisation was made. The 1st, 2nd, 3rd and 5th Squadrons were combined into a training unit for the Flying School and only the 4th (Russian) Squadron was retained as an operational unit. From this it can be assumed that the disbanded squadrons had not been found to have any combat value.

In March 1929 the Aviation Bureau (Hang k'ung ch'u) of the Mukden Government was reorganised and redesignated the Headquarters of the North-Eastern Air Force (T'ung-pei k'ung-chün ssu-ling-pu) and Chang Hsüeh-liang was formally appointed Commander-in-Chief on 31 March. His title was Chief of the Liao Ning Air Force of the Republic of China, Liaoning being the new name for Fengtien Province. General Chang Huan-hsiang, formerly Chief Administrator at Harbin, was appointed acting head.

Chang Hsüeh-liang had now become interested in British aircraft and in December he asked for offers for 27 scouts and five Moth trainers. The offer was accepted verbally in January and on 10 March 1930 he signed a contract with Arnhold & Co for six de Havilland DH 60 Gipsy Moth trainers and one DH 60M Metal Moth "de Luxe" with enclosed cabin for his personal use. These aircraft were delivered in April and May 1930. No primary instruction had been in progress during the last two years due to lack of suitable equipment, and it was intended to resume training upon arrival of the Moths. In October Chang agreed to purchase a Puss Moth and additional six to ten Gipsy Moths, but for the time being no firm contract was signed.

At the end of May 1930 the following aircraft were reported to be serviceable at Mukden: eight Junkers, one Heinkel, eight Breguet 14A2s (400 hp Lorraine), 20 Potez 25s (those damaged during the war with the USSR had all been repaired), one Breguet 19A2, one Breguet Bidon and six Gipsy Moths. Among older types were a number of Caudron C 59s, Breguet 14A2s, Schreck FBAs and Vickers Vimys.

Manufacturers from different countries competed for new contracts and demonstrated several types of aircraft at Mukden in 1930-31. Arnhold & Co sent a Fairey IIIF general-purpose two-seater in April 1930, but it crashed on the first attempt by company pilot Jones to take off. On 10 March 1930 Chang signed a new contract with Arnhold & Co, whereby the British firm was to send one example of the Blackburn Lincock single-seat fighter to Mukden for evaluation. A fighter competition was planned for May 1930.

In June 1930 two Czech single-seat fighters were erected at Mukden: a Letov S.131 imported by Frenchman Lorant and an Avia Ba 33 imported by Skoda. The Avia was assembled by mechanic Vacek and was test flown on 12 June by company pilot Cestmir Hanus. The Letov was demonstrated by pilot Covanda and engineer Slaby. A French Dewoitine D.27 single-seat fighter brought out by Randon & Co reached Mukden in July with pilot Surtel and mechanic Chereau, and these three fighters were shown to representatives of the Manchurian Air Force during the autumn. During a military parade on 5 October a

comparison test was made between the Avia, the Dewoitine and the Letov. The Avia came out as the best, but still no order was obtained. The Avia was then disassembled and stored under bond in a hangar. Negotiations about a possible sale of the Letov were without result and that aircraft was probably returned to Czechoslovakia.

Japanese Instructors

Two Japanese officers, Captain Otsuka, instructor at the Military Cadets Academy in Tokyo, and Captain Harada, military aviation instructor, were appointed air advisers to Mukden in May 1930. In June Manchuria took initial delivery at Tokorozawa aerodrome in Japan of nine aircraft intended for a Japanese advanced training mission to Mukden. Three of them, Nakajima Type Ko 4 fighters (copies of the Nieuport NiD 29C1), were scheduled for immediate delivery. They were shipped from Japan and were then flown into Mukden later in June.

At the same time the Japanese Air Mission headed by Colonel Makino arrived in Mukden. The mission, which consisted of 15 people including five instructors, and the aircraft were hired for six months starting on 1 July 1930, reportedly for free. On 27 July the Japanese Mission received another three Nieuport fighters and three Kawasaki KDA-2 Type 88 Light Bombers from Japan. As one of the original Nieuports had been destroyed in a mid-air collision there were now five Nieuports and three Kawasakis at Mukden, all armed.

In January 1931 thirty cadets graduated and the Japanese Air Mission returned home as scheduled. However, a new contract for three or four instructors was being negotiated. Five of the nine Japanese aircraft brought to Mukden had been wrecked or damaged and were paid for by the Mukden government, and the remaining four were shipped back to Japan. Apparently the results achieved were considered satisfactory because in March 1931 the mission returned to stay for another six months.

Five Potez 36 cabin monoplanes intended as light transports were delivered in May 1930, but only one of them ever became airborne. The type was considered to be under-powered and Chang later tried in vain to sell them. At the same time two Potez 25s fitted with Rolls-Royce Eagle engines arrived. The engines had been taken from the stock of old engines stored at Mukden and had been sent to France in 1928. The original intention was to build Rolls-Royce-powered Potez 25s at Mukden, but the type's performance was found to be too poor. In September 1930 American pilot Perry Hutton arrived in Mukden with a Ford 5-AT-C Tri-Motor for demonstrations. Chang Hsüeh-liang purchased this aircraft in December for his personal use, hired Hutton as pilot and engaged an American mechanic. Chang frequently used the Ford and often flew it himself.

The 4th Squadron of the North-Eastern Air Force, the so-called "Russian Squadron", deployed to Nanyüan with three Potez 25s in November 1930[12]. It was commanded by Colonel Lykin, who had been in the French Air Force in WW I, and observer Kulebyakin had been with the RAF in Persia. The personnel consisted of three Russian pilots and one observer, four Russian mechanics and a number of Chinese helpers. A new aerodrome was being prepared at Pei Ling (Northern Tomb), near Mukden. The three aircraft stationed at Nanyüan returned to Mukden on 24 March.

Shansi had captured two aircraft during the war with Nanking and one of them, a Vought O2U-1 Corsair, was turned over to Mukden. It arrived at Nanyüan on 13 March 1931 and took off for Mukden on the 18th.

International Competition at Mukden

Late in 1930 the Blackburn Lincock mentioned earlier arrived and on 23 January 1931 a demonstration took place. The aircraft was flown by Captain F A Swoffer. At the same time an Avro 621 Lynx Trainer, which had arrived from Hong Kong on 5 November, was shown by FEACo com-

[12] Another report mentions two Potez 25s and one Breguet 19.

Arnhold & Co pilot F A Swoffer in front of a DH 60 Moth in Mukden.

Manchurian Air Force 1931

US Commercial Attaché E P Howard reported on the North-Eastern Air Force after having visited Mukden in July 1931. The aircraft inventory at that time consisted of 20 Potez 25A2s, nine Junkers K 53s, 34 Breguet 14s, three Kawasaki Type 88 Light Bombers, four Nieuport NiD 29s, one Breguet 19 and one Dewoitine D.27C1. The Vought Corsair is mentioned and was waiting for repairs. There were seven Gipsy Moths and 25 Caudron C 59s "out of an original 60". Only six or seven Caudrons were still being used, however. Twelve Schreck FBA 17s and 19s "from 62 originally delivered" were used by the Navy. Only six were in flying condition.

There were six Potez 36s*, a Ford 5 AT, and a Junkers F13, which had been used as the personal transport of Chang Hsüeh-liang before the purchase of the Ford. In addition there were a number of old aircraft: two Fokker D.VIIs, 14 Vimys, six Avro 504Ks and one old pre-WW I Caudron. Nineteen new Moths were being assembled. General Poulet was in charge of the Aviation School. General Lykin was commander of the Potez 25-equipped 4th Squadron with four other Russian pilots, one Russian mechanic and one Russian adjutant.

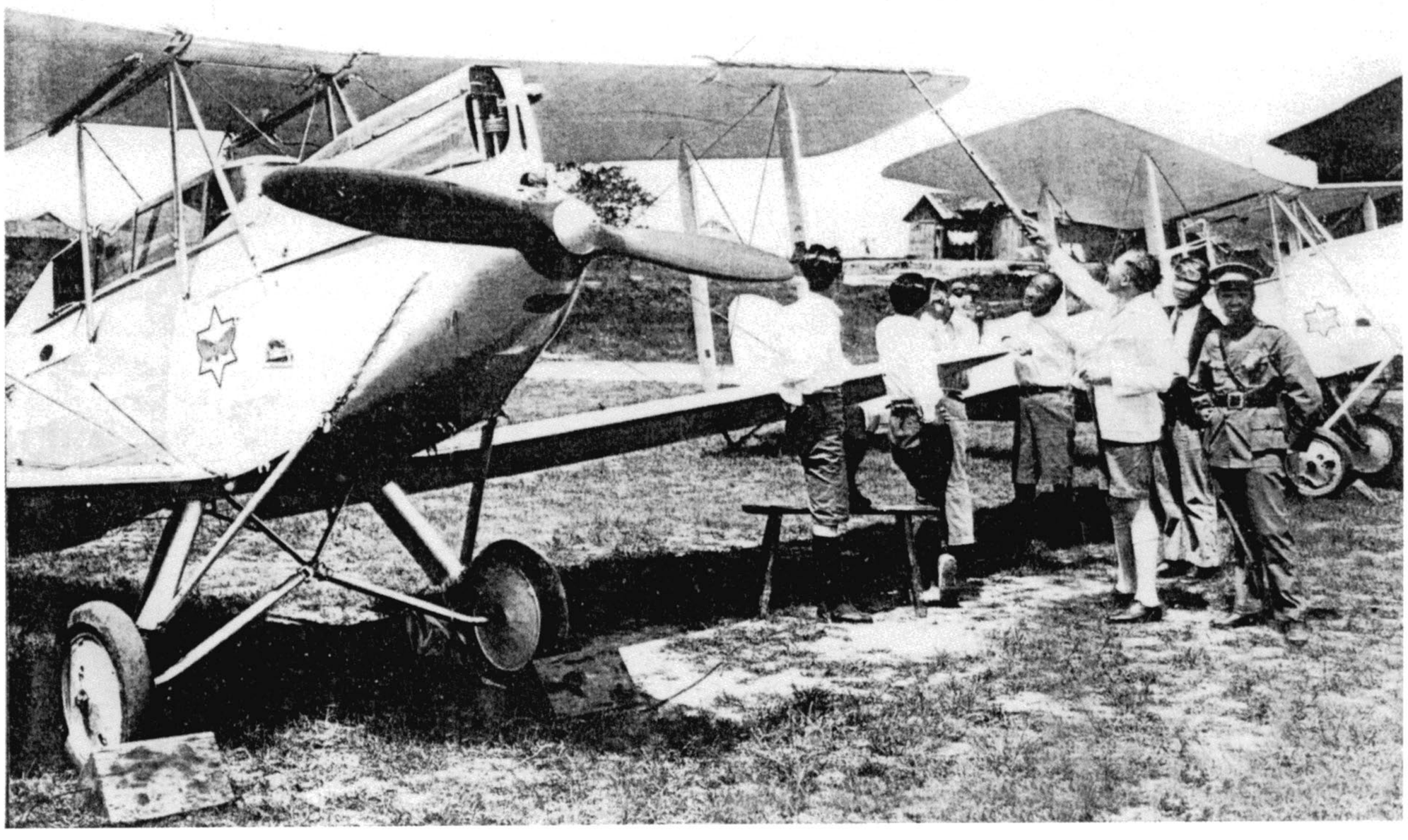
* *This is probably a mistake as only five were delivered.*

pany pilot A V Harvey. The Avro force-landed near Darien on 9 February, while on its way from Mukden to Nanking for demonstrations and the Lincock was sold to Nanking in July 1931. The FEACo also intended to send a Westland Wapiti IV to Mukden in January 1931, but that aircraft was sold before the demonstration could take place.

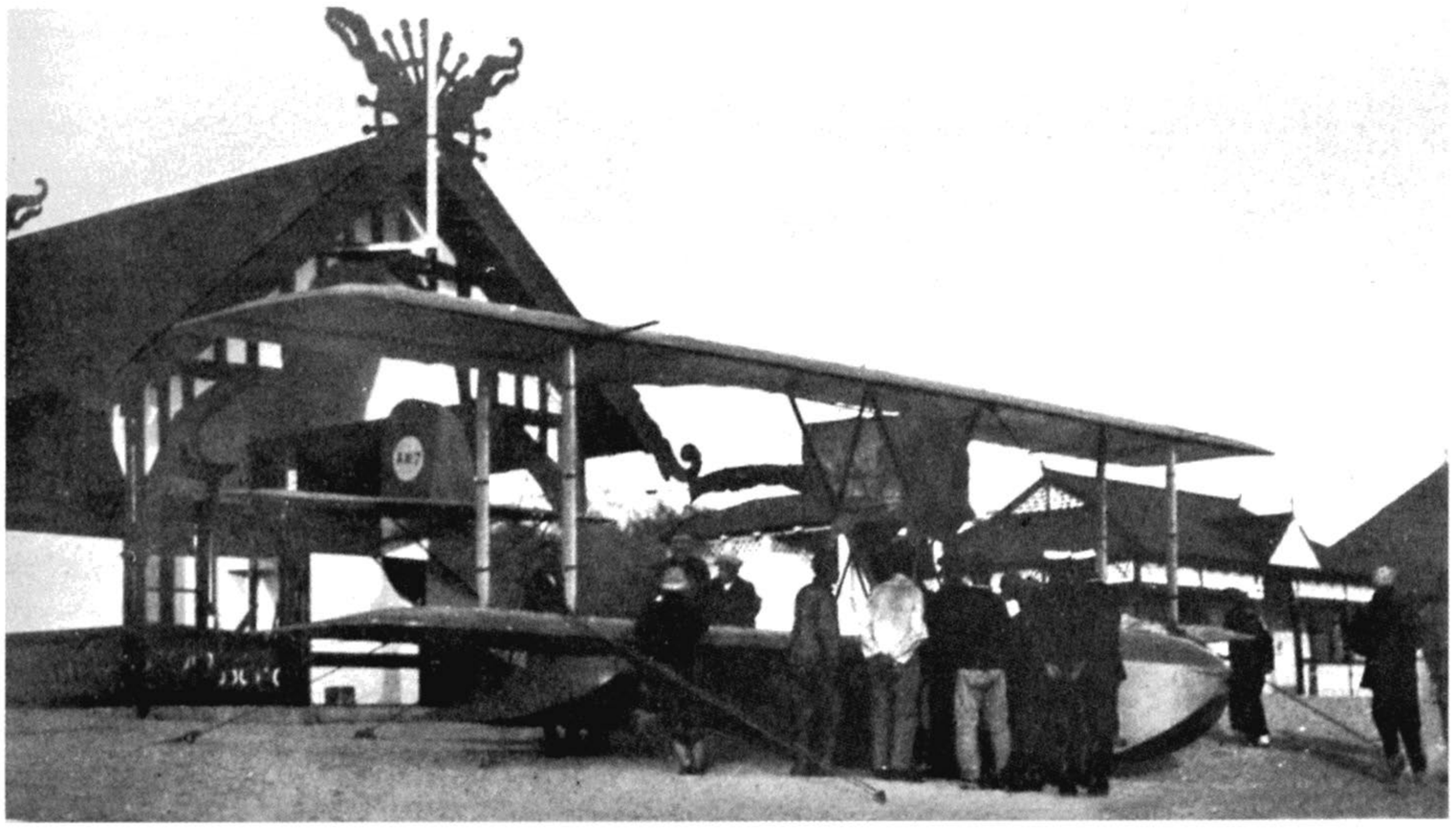
The FEACo had sent its pilots Harvey and Vaughan-Fowler, who had been working in Mukden since September 1930, and two Chinese. Arnhold & Co had W E F Jones and three other specialists at Mukden and British designer Parrot was sent out by Armstrong-Siddeley in February 1931 to investigate the prospects of establishing an aircraft factory at Mukden. There were three French pilots and two other Frenchmen, who stayed for several months, and the Czechs. James C Elder was there as a representative for Ford. L E Gale sent a Waco MNF flown by American pilot Williams, but this machine had problems with its engine and was not flown after May. Randon & Co brought out a 240 hp Caudron (possibly a C.140) and the pilot M Coulet was arranging to fly it to Peking for a demonstration in July.

Raymond Berlioux of the Societé Francaise de Constructions Aeronautiques submitted a plan for an aircraft factory, but this came to nothing when he died suddenly in December. A representative of the Douglas Aircraft Company presented another plan for an aircraft assembly plant in Mukden.

Inspired by the Canton rebellion against Chiang Kai-shek in May 1931, Shih Yu-san, a subordinate of Feng Yü-hsiang stationed in the Peking-Paoting area, revolted in July 1931 and interrupted traffic on the Peking-Hankow railway. Some 34 aircraft were sent out to deal with this during July and 16 of these were moved back to Mukden by rail in mid-August after the rebellion had been put down. The opera-



The leading edge slats of Chang Hsueh-liang's personal de Havilland DH 60M Moth de Luxe being demonstrated at Mukden.



Schreck FBA 17 HMT2 flying-boat.

tions had consisted largely of observation work and some bombing of the railway and Shih's alleged headquarters at Shihchiachuang. The 4th North-Eastern Aviation Squadron, consisting of seven aircraft, returned to Mukden at the end of August.

When fighting first broke out early in July, Chang had ordered the purchase of all available aircraft at Mukden in order to strengthen his air force. The ten Nieuport fighters and Kawasaki bombers used by the Japanese Air Mission were immediately acquired and sent south to the front and Randon & Co sold the Dewoitine D.27 on 20 July, but that deal was subject to the aircraft passing satisfactory tests first.

Fokker representative Rasch had arrived at Mukden in January 1931 to negotiate an offer for an aircraft factory. In December Fokker had proposed its types D XVI, C VE, F VIIa and F VIIb-3m to Manchuria. On 4 April Chang signed contracts for a factory and for the delivery of 30 Fokker D XVI single-seat fighters and 30 Fokker C VE two-seat reconnaissance aircraft. One of each type was to be brought to Mukden for demonstrations. The D XVI arrived on 25 July, was assembled by a Fokker mechanic and on 15-18 August and 1-4 September Fokker pilot Gerhard Sandberg made the delivery tests.

Two other contracts were signed in April 1931, one with Arnhold & Co for the delivery of 19 Gipsy Moths, and one with the FEACo for the delivery of five Avro 621 Trainers and five Avro 626 Advanced Trainers. The Avro aircraft were equipped with bomb racks, photographic equipment and mounts for Lewis machine guns. Twelve of the Moths had arrived by July. Arnhold pilot Swoffer assembled and tested them and on 6 September the whole batch was handed over.

By August 1931 General Chang Huan-sian was Commander-in-Chief of the North-Eastern Air Force, which was organised into the following units:

1st Squadron (Reconnaissance-Bomber): Junkers K53

2nd Squadron (Fighter): Nakajima Type Ko 4 (NiD 29)

3rd Squadron (Reconnaissance-Bomber): Breguet 14, Kawasaki Type 88

4th Squadron (Reconnaissance-Bomber): Potez 25

5th Squadron (Reconnaissance-Bomber): Potez 25

Flying-boat Group (two squadrons): Schreck FBA 17 and FBA 19

Training Group: DH60 Moth, Caudron C 59, Breguet 14, Schreck FBA 17

Transport Flight: Ford Tri-Motor, Potez 36, Junkers F13

The "Mukden Incident"

The Japanese set up the so-called Kwantung Government to administer the territories and rights they had gained in the Russo-Japanese War. The South Manchuria Railway Company was Japan's largest company and the Kwantung Army was responsible for policing the railway lines. The majority of the rich Manchurian coal and iron mines and many other resources were in Japanese hands as well.

On 18 September 1931 troops of the Japanese Kwangtung Army started without warning to occupy Mukden and captured the arsenal and the aerodrome with all aircraft. At 8 o'clock in the morning of 19 September trucks with two companies of Japanese infantry arrived at the aerodrome. One company occupied the hangars and one prepared to penetrate the group of administration, store and workshop buildings. General Chang Fang-chiang, Director of Aviation, who was absent, had in fact previously sent instructions not to oppose the Japanese troops and no attempts were made to save the equipment. All aircraft, with the exception of Chang's Ford Tri-Motor and a Potez 25[13], which were in Peking, were captured and were quickly repainted with Japanese markings.

The Japanese Flying Training Mission, which had returned in March 1931, and whose second contract had ended on 26 August 1931, gathered at Mukden in the afternoon of 19 September. They had at their disposal ten Nieuport ND 29s, four Type Otsu-1 (licence-built Salmson 2A2) and two Kawasaki Type 88 Light Bombers that had been flown in from Heijo aerodrome in Korea. Head of the mission was Lieutenant-Colonel Tien Tien, who became commander of the operational Japanese air forces after the occupation.

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[13] The Potez 25 was used to make a photographic survey of the area around the Peking-Hankow railway where the fighting with General Shih Yu-san had taken place.

The Kawasaki KDA-2 Type 88 Light Bomber was used by the Japanese Air Mission to Manchuria in 1930-31.

The mission included Commander Ta Tsong, observation instructor, Commander Siao Tao, bombardment instructor, Captains San Pein and Yuan Tien, fighting instructors, and Sergeant Ouang Chouen, mechanic[14].

About 40 of the seized aircraft, including Potez 25s, Caudron C 59s, Junkers K 53s, Nieuport ND 29s, DH 60 Moths and Avros were immediately put in service by the Japanese and used in their operations. The Potez 25A2 was called Potei-go by the Japanese Army Air Force. There was intensive air activity and many reconnaissance and ground-attack missions were flown with groups of ND 29s and Potez 25s. On 8 October Chinchow, where the Manchurian Government and the headquarters of the North-Eastern Army had been provisionally set up, was bombed by 12 aircraft from Newchwang. One of the ex-Manchurian Nieuport ND 29s crashed in November while stunting at low altitude over Mukden. In January 1932 a Potez belonging to the No 10 Chutai (Aviation Company) was shot down while attacking guerrilla units in Manchuria. Several of the aircraft types found at Mukden, including the Dewoitine D.27 and Junkers K 53, were only evaluated and not used operationally.

Chiang Kai-shek ordered Chang Hsüeh-liang, who fled to Peking in his Ford Tri-Motor, not to resist the Japanese attack. The intention was to fix the blame for what was to become known as the "Mukden Incident" on the Japanese. By February 1932 Japan had taken control of all of Manchuria and proclaimed its independence under the name Manchukuo.

Seized Aircraft

The aircraft seized by the Japanese were those mentioned in the July 1931 report as related above, including the 19 new Moth trainers, of which only 12 had been assembled and formally handed over. Arnhold & Company had not received all payments for the last seven aircraft, but in June 1933 Japan paid all outstanding claims[15].

About 16 September five Avros had arrived at Chinwangtao[16]. FEACo pilot H A Howes went there, but could not get them ashore until after 19 September and they were then stored where they were. Two Avro aircraft (one of them an Avro 621) were seized at Mukden and placed under guard by the Japanese in September. One of them was destroyed when a hangar was burnt by "bandits" on 30 August 1932, the other being damaged when used by the Japanese. The FEACo finally received payment for these aircraft in June 1933. In the meantime the five Avro 626s were kept in bond in Shanghai. FEACo tried without success to persuade Chang to take delivery of these aircraft in Peking, but by the beginning of December they were still being stored at Chinwangtao and Shanghai.

By September 1932 payment of balances due to foreign firms were being settled. This probably concerned L E Gale's Waco, which was also seized. Gale tried to have it sent to Shanghai after its engine had been repaired, but it is unlikely that the Japanese agreed to do so. The Fokker D XVI was demonstrated at Ch'ingho, Peking, as late as 18 September and the C VE arrived in Peking from Tientsin only in mid-October. On 16 October Chang Huan-sian annulled both Fokker contracts. As Fokker had fulfilled their part of the contract, they wanted to at least make delivery of the two demonstration aircraft. With Mukden occupied by the Japanese, Chang Hsüeh-liang had no interest in this. A demonstration at Nanking was proposed of the C VE, which was inspected by Chang Huan-sian on 30 October, but Fokker refused to do this. Apparently both aircraft were finally sold to the Japanese and they later turned up in service with the Manchukuo Government.

The Avia Ba 33 was seized and on 1 October it was assembled and Japanese national insignia were painted on. The Japanese used it for observation and ground-attack and

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[14] Japanese names are probably suspect. They have been taken from a French intelligence report, which cites a Chinese source.

[15] These aircraft did not receive Japanese insignia at first, but were placed under guard until they had been paid for.

[16] This port was in Hopei, on the Tientsin-Mukden railway, just south of the Manchurian border.

after repeated Czech protests they finally agreed to pay for it on 17 March 1933.

Naval Aviation

In 1924 the small Manchurian naval unit was expanded into a navy with four gunboats. The Schreck FBA amphibians at Mukden belonged to the Air Force, but a few were apparently transferred to the Navy at Tsingtao and used for training. In the summer of 1928 Russian pilot Homiakoff was posted to Tsingtao as acting chief of the Manchurian Naval Air Service, which was commanded by Colonel Huang. One each of the FBA 17 HMT2 and FBA 19 HMB2 was transferred from the squadron at Hulutao and taken on charge. By December 1929 there were two FBA 19s and three FBA 17s at Hulutao. The Tsingtao station had two FBA 19s and three FBA 17s.

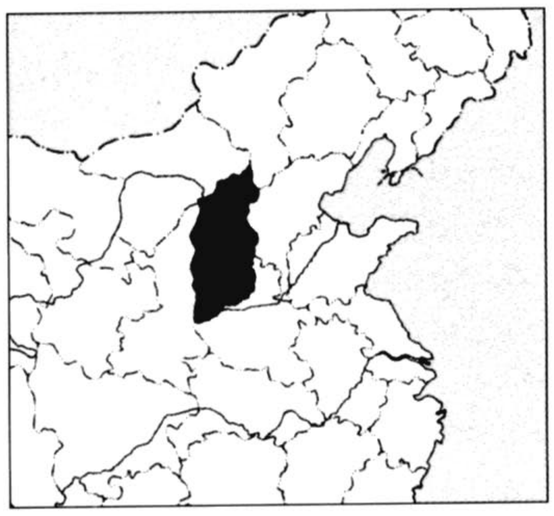
In February 1930 a French intelligence report mentioned that six Schrecks, four FBA 19s and two FBA 17s, were in the hands of Admiral Shen, the Commander of the Manchurian Navy. They were based in a small bay southeast of Tsingtao, but inside the city. This seaplane base had one hangar and a small wooden shed. The Tsingtao unit was also referred to as the "North-Eastern Associated Squadron". By April 1931 there were four FBA 19s, two FBA 17s and a seventh non-assembled Schreck, and two Russian instructors at Tsingtao.

Aircraft used in Manchuria

Type	Quantity	Year	
Handley Page O/7	3	1920	Taken from Peking
Avro 504K	25-30	1920	Taken from Peking (18), plus local production
RAF SE.5A	2	1920	Taken from Peking
Caudron (1912 type) trainer	3-5	1920	Taken from Peking
Dil	4	1922	
Curtiss trainer (Jenny?)	2	1923	Built in Japan
Breguet 14A2, 16Bn2, 14T	>60	1923	
Caudron C 59	16	1924	
Fokker D VII	3	1924	
Hanriot H.32	3	1924	
Lohner R	2	1924	
Schreck FBA 17HMT2 and 19HMB2	>40	1924	
Spad fighter	1	1924	Taken from Peking (?)
Vickers VIM	>10	(1924)	Taken from the KMC (and Peking)
Vickers Vimy	>14	(1924)	Taken from Peking and the KMC
Nieuport	1	1924	Captured from Paoting
Ansaldo A 400-4	2 (3)	1924	Captured from Paoting
Caudron G 3	10	1925	
Breguet 19A2 and 19GR Bidon	2	1926	
Caudron C 127	20		Not built in 1927
Morane Parasol	1		Captured?
DH.9A (R-1)	2	(1926)	Possibly captured from the KMC
Junkers K 53	9	1928	From Shantung.
Junkers F 13	1	1928	From Shantung
Heinkel HD 24	1	1928	From Shantung
Potez 25A2	25	1928	
Potez 32	1	1929	
DH 60 Gipsy Moth	26	1930	
Kawasaki KDA-2 Type 88 LB	*	1930	
Nakajima Type Ko 4 (NiD 29C1)	*	1930	
Potez 36	5	1930	
Ford Tri-Motor	1	1930	
Vought O2U-1 Corsair	1	1931	Captured from Nanking by Shansi and sent to Mukden.
Dewoitine D 27C1	1	1931	
Avro 621	5		Not delivered in 1931
Avro 626	5		Not delivered in 1931
Fokker D XVI	30		Not delivered in 1931
Fokker C VE	30		Not delivered in 1931

* Used by the Japanese Air Mission in 1930-31: 3 Kawasaki KDA-2 Type 88 Light Bomber and 6 Nakajima Type Ko 4. Five of these were taken over in January 1931. Another 10 of the same types were used in 1931 (at least 4 Nakajimas and 3 Kawasakis) and they were purchased by Manchuria in July 1931. In September 1931 the Japanese Mission apparently had 10 Type Ko 4s (Nieuport ND 29), 4 Type Otsu-1s (Salmson 2A2) and 2 Kawasaki Type 88 Light Bombers.

Shansi



Yen Hsi-shan reigned Shansi province in northern China since 1911. In the early 1920s he decided to expand his gun repair shop at Taiyüan into a large, modern arsenal and machinery was purchased mostly in Germany and was operated under the supervision of several German and Swedish engineers. In 1926 the Taiyüan Arsenal, situated 2 miles north of the city, employed 8,000 workers and was among the largest in China. It produced all kinds of weapons, including mortars, machine guns and guns.

Yen also decided to build his own aircraft and approached the British Captain E E Fresson asking him to set up an aircraft factory at Taiyüan. A contract was signed and Fresson promised to produce three prototypes. He hired the German aircraft engineer Ferdinand Schoettler, who had been working at Lunghua, Shanghai, previously, and arranged the construction of workshops at the arsenal and of an airfield. Work on the first aircraft started in the spring of 1924. Engines, parts and materials were purchased from the Aircraft Disposal Company in Great Britain, and imported as "motor boat engines", etc. Wright, the arsenal's Technical Adviser, helped design the aircraft. Most of the workers had been trained by Fuetterer and Schoettler in the factory at Lunghwa in 1923.

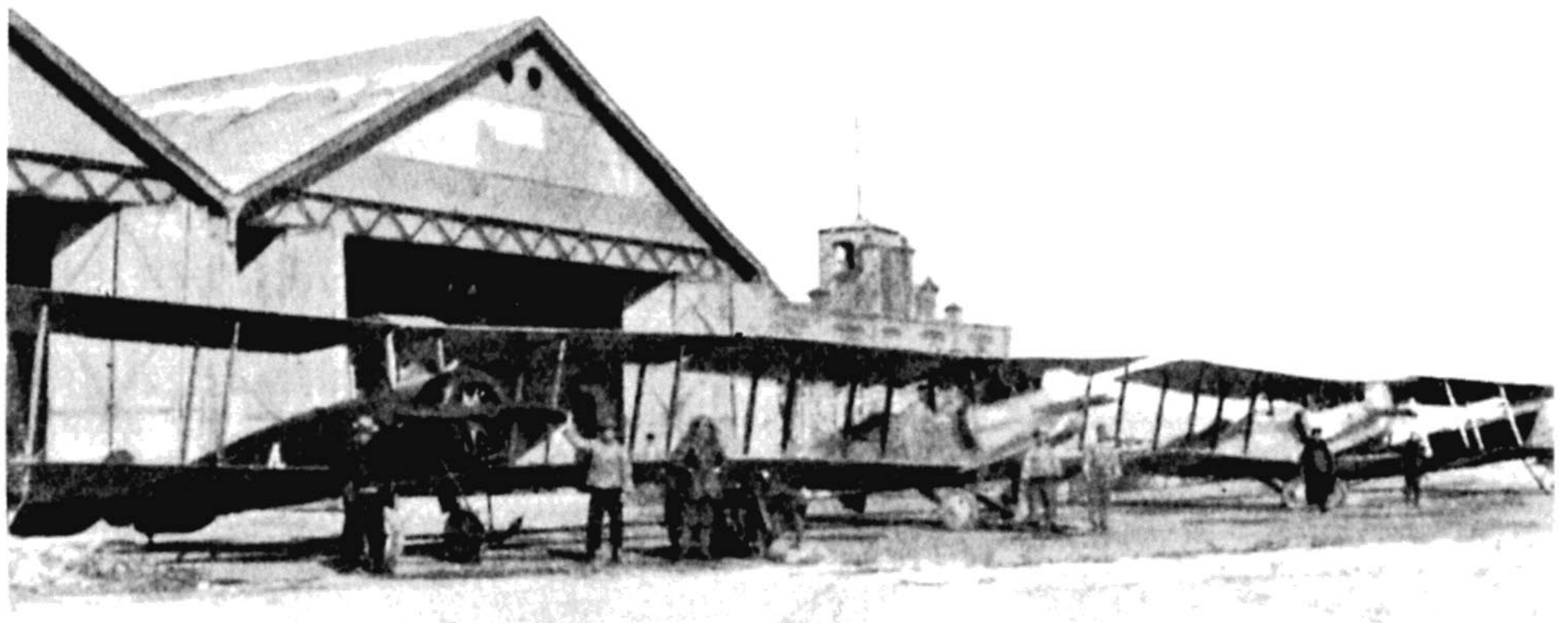
The first aircraft, a two-seat training biplane powered by a 150-160 hp Beardmore engine, was called the Schoettler B3 (B III). It was flown for the first time on 21 September 1925 by Ernst van Vloten, a Junkers engineer and pilot, who had been hired by Yen Hsi-shan as pilot and adviser. Fresson also flew the new machine and completed its testing.

Fresson and Schoettler had problems with finding suitable materials locally. In March 1925 Fresson approached Pottinger & Co at Tientsin and asked them to be agents for the import of six Avro trainers and a number of engines. The British authorities did not approve of this deal, however. Fresson instead started construction of Avro 504 trainers at the arsenal, but was eventually fired in October 1925.

Shansi now turned to France. Two Breguet 14A2 bombers and five Renault 12 engines were ordered from W Outsing of Boixo Frères in February 1925 and these were promptly shipped from Antwerp on SS "Peru". They were detained by British authorities both at Singapore and Hong Kong for some time, but were soon released when the French stated that the aircraft were "civil". They arrived at Tientsin as transhipment from Kobe on SS "Toyu Maru" on 22 August and were offloaded on 3 September for further transport to Taiyüan. The first machine was assembled by French pilot L'Hommoux and was first flown on 2 October. On the following day he flew into a telegraph wire, crashed and was killed in the ensuing fire. The cause of the accident was engine failure and van Vloten, who was asked to fly the second machine, refused to do so. It was later overhauled by Schoettler, but was found to be totally rotten and had to be completely rebuilt.

Van Vloten had arrived in Taiyüan on 1 April 1925 and 15 days later he had secured the Governor's signature on an aircraft contract. It called for the delivery of one Junkers A 20 two-seater and one F 13 six-seat passenger transport aircraft. In fact, Siemsen & Co had already arranged an earlier (preliminary) Junkers contract with Shansi. That agreement specified that van Vloten was to be engaged as adviser and organiser of aviation and that one A 20 and one F 13 were to be ordered later. Yen Hsi-shan was to pay for the transport of the aircraft and was to make final

Schoettler S4 and Schreck FBA 17 at Taiyüan, Shansi.



Shansi Air Force line-up: An Avro 504K, two Schoettler aircraft and a Breguet 14.

payments only after they had been demonstrated at Taiyüan.

The two Junkers machines arrived at Tientsin on 28 September 1925. They remained there for some time because of the outbreak of war between the KMC at Kalgan and Li Ching-lin at Tientsin and were finally seized by Shantung warlord Chang Tsung-ch'ang in February 1926. When Siemsen found that they could sell both aircraft without bothering to transport them to Taiyüan they decided to do so, and Chang Tsung-ch'ang was persuaded to pay for them. When Yen's representatives arrived in Tientsin in July and discovered that the aircraft had been sold to Chang Tsung-ch'ang, the Shansi Government immediately broke all connections with Siemsen.

During 1925 van Vloten had arranged an airport at Fen Ho, 8 km north of Taiyüan, which was ready in September. A two-section brick hangar with an engine repair shop and other facilities was erected. The German mechanic Hartmann was engaged in the workshop in October 1925. He left in February 1926, but apparently returned again later.

Shoettler's aircraft construction activities continued and his second design at Taiyüan was the Schoettler S4 trainer. It was very similar to the B3 and was fitted with the same type of Beardmore engine, although it was planned to fit a higher-powered Mercedes later. It was completed sometime around May 1926. Schoettler had plans to build a further batch of four C5 reconnaissance aircraft with Renault engines, but this was never realised as he was dismissed in August 1926. The reason was that his aircraft were considered to be too expensive.

In April 1926 General Huang Kuo-liang was Commander of the Air Force[1]. There were two 160 hp Beardmore, six 300-320 hp Renault 12-FER and four 110 hp Le Rhone engines at Taiyüan. The only Chinese pilot, Liu[2], was described as "bad" by van Vloten. In November 1925 a Korean pilot named An, who had been trained in Japan, had been engaged. On 2 February 1926 he took off in the Schoettler B3, crashed, and broke off the whole rear fuselage.

An offer for a two-seat Dornier aircraft was received in the summer of 1926 and Sterz (Siemsen & Co) arrived to negotiate. Instead Yen apparently ordered three Breguet 14A2s and two Caudron G 3s from Boixo Frères in August 1926. This company also intended to bring four Schreck FBA amphibians to Taiyüan without any order, to demonstrate them[3]. Two French pilots and a number of mechanics had allegedly been hired.

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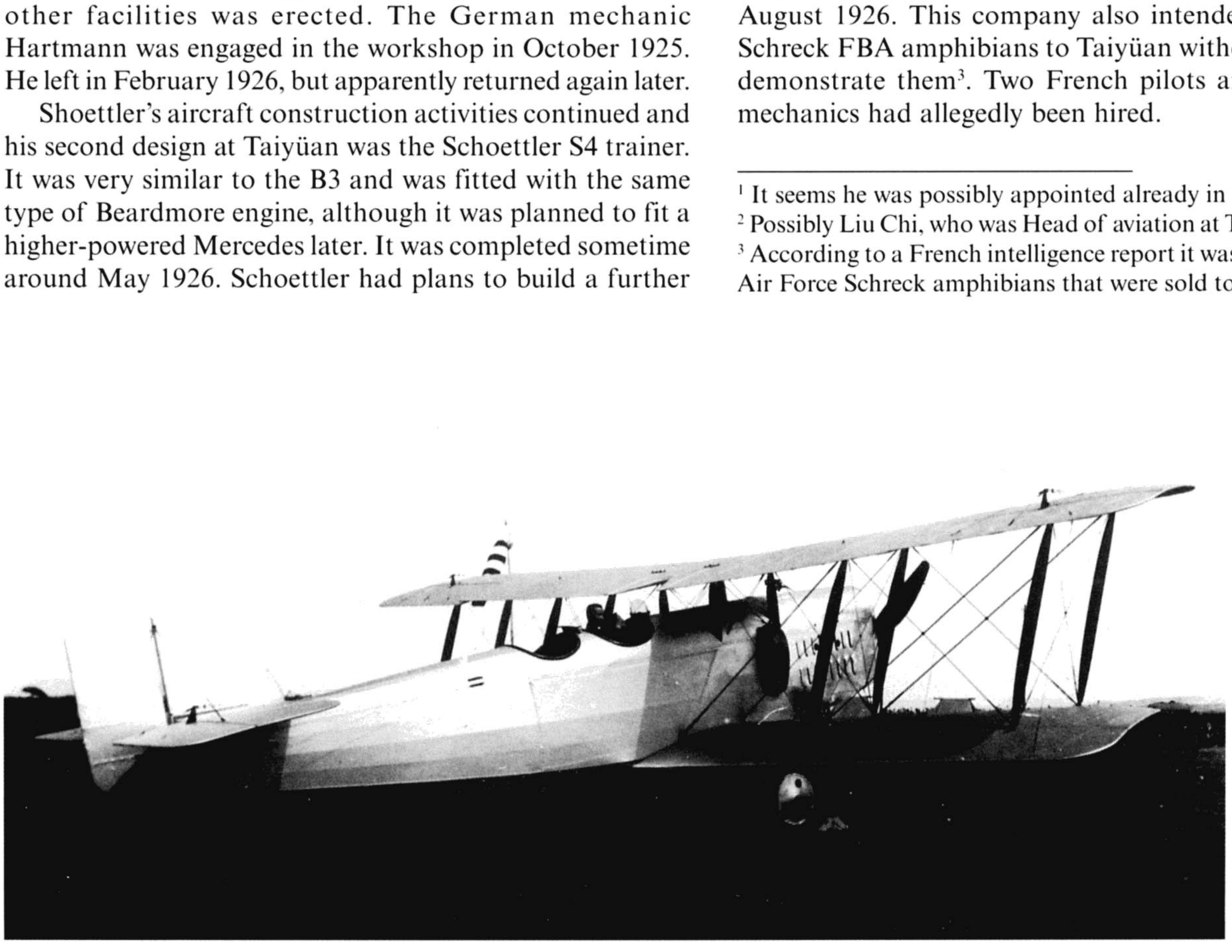
[1] It seems he was possibly appointed already in 1919.
[2] Possibly Liu Chi, who was Head of aviation at Taiyüan until 1927.
[3] According to a French intelligence report it was four Manchurian Air Force Schreck amphibians that were sold to Shansi.



Schoettler B 3, Sepetmber 1925.

It soon transpired that Boixo Frères had signed an agreement, which gave them the right to build a factory for automobiles and Caudron aircraft at Taiyüan. A Schreck FBA 17 HMT2 amphibian was flown to Taiyüan by two French aviators and was demonstrated. It was there in October 1926 and later returned to Peking. It seems to have been purchased, however, and eventually joined the small air force at Taiyüan. Yen's order was apparently for two (not three) Breguet 14A2s and three Caudron C 59 trainers, but none had arrived by January 1927. A flying school was to be started with the Caudrons and a French instructor, but it seems that the delivery of the French aircraft and the factory plans were never realised. In November 1929 it was reported that Yen Hsi-shan recently had rejected delivery of some "Breguet aircraft of undecided age" (See later!).

Yen had apparently been reconciled with Junkers and invited the company to send new samples of its aircraft to Taiyüan. The steamer "Etha Rickmers", which had a new A 20 for Shansi on board, was forced to land the aircraft at Tsingtao about 6 January 1927, however. It was taken there by Chang Tsung-ch'ang and brought to Tsinan - as was the F 13, that was landed a few days later! A third F 13 was offloaded in Tsingtao and was allowed to pass Tsinan, however. Van Vloten flew it from there to Taiyüan in April. He then flew the aircraft regularly with Hartmann as mechanic, but early in 1928 he crashed and broke his leg and he finally left Shansi early in 1929.

In January 1927 a locally built Avro 504K trainer with 110 hp Le Rhone engine was completed and successfully test flown. It received the serial number '4' and was later photographed together with two Schoettler aircraft, a Breguet and the Junkers F 13. It is not known how drawings and/or parts for the Avro were obtained. Perhaps Fresson managed to have parts sent out from Great Britain. It is also quite possible that Schoettler could have brought with him the Avro 504K that he had in Shanghai in 1922-23 and that he had rebuilt this machine. The two Schoettler aircraft look very similar and both seem to be S4s, but it is possible that one is the B3, which could have been rebuilt after the crash in 1926.

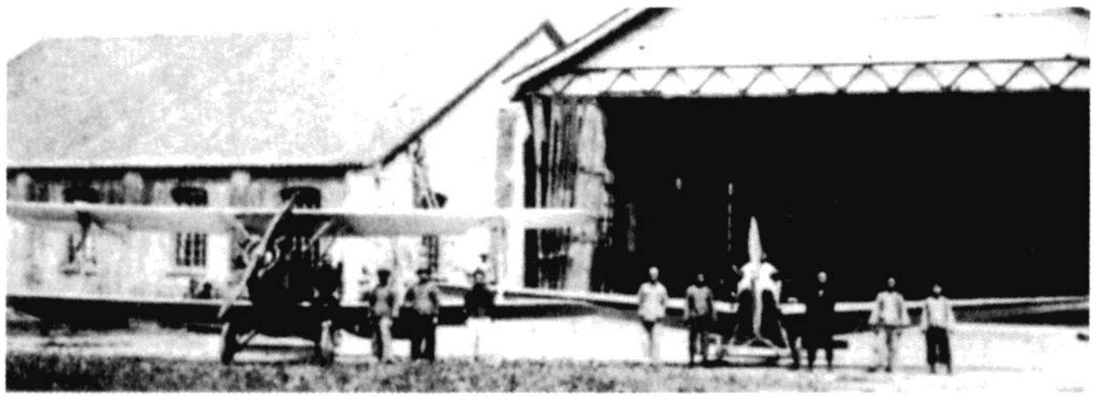
Yen allied himself with Chiang Kai-shek's National Revolutionary Army (NRA) in 1927, raised the KMT flag in June the same year and accepted an appointment as Commander-in-Chief of the Northern Route Army. In the February 1928 reorganisation of all KMT-affiliated armies, the Shansi Army had become the 3rd Army Group of the NRA and was to take part in the Northern Expedition. After participating in the fighting with Chang Tso-lin's Fengtien forces from April, Yen's troops were able to take Peking on 8 June. The Junkers F 13 was reportedly of great use in the war, but at the end of 1928 only the Breguet and the Schoettler remained serviceable. The Schreck amphibian had been damaged. There were one Korean and three Chinese pilots, and one French mechanic. One French and one German (van Vloten) pilot were under notice.

In 1929 the aircraft inventory at Taiyüan was much increased. In August Carlowitz & Co delivered two German BFW-built trainers, a U 12 Flamingo biplane and an M 23 monoplane. They were assembled, test flown and then demonstrated by company pilot Lehmann. The aircraft had been brought out by the company at their own risk, but were sold after the demonstration. At the same time Arnhold & Co had managed to sell six de Havilland DH 60 Gipsy Moth trainers. They had arrived in Hong Kong and were being test flown and handed over by Arnhold company pilot W E F Jones in September 1929.

Five Morane-Saulnier parasol monoplane trainers, probably of the AR 35 EP2 type, were received in August 1929[4]. They had in fact been ordered from a French firm already in 1926, but were, for some reason not delivered until 1929. Allegedly, the order had been for new aircraft powered by 300 hp engines. When inspected, the "new" aircraft were found to be second-hand, and fitted with 80 hp engines, and Yen Hsi-shan refused to take delivery. This affair seems to be related to the frustrated purchase of French aircraft already described.

[4] This is according to a contemporary French report. Another French report dated April 1930 says that delivery of these aircraft was made in June 1929.

Probably the German (or European) "colony" at Taiyüan. Junkers F 13 with German pilot Van Vloten to the right.



Two German BFW aircraft arrived at Taiyüan in 1929: A U 12 Flamingo and an M 23.

There were now five Chinese flying instructors and 32 cadets at Taiyüan. The aerodrome had been improved, it was described as "excellent" by a foreign observer, and the buildings included four modern brick hangars and two wooden hangars.

By the end of 1929 the aircraft inventory included, besides the new BFWs, Moths, and Moranes, some old Breguet 14s, two Schoettler aircraft and the damaged Junkers F 13. The spare parts needed for the repair of the F 13 had been ordered and it was planned to buy spare engines for the German trainers (one Siemens Sh 13 and one Sh 14). Hsiung Pin was Director of the Aviation Bureau and General Chung Mo-yuan had been appointed Head of the flying school. He maintained that 35 pilots had been trained "in the last two years". The Korean pilot An was chief instructor and in reality there were very few, if any, qualified Chinese pilots.

In February 1930 the political antagonism in Northern China intensified, and Yen Hsi-shan and Feng Yu-hsiang in Honan decided to try to get rid of Chiang Kai-shek. Chiang Kai-shek attempted to brake their alliance by appointing Yen deputy Commander-in-Chief of the KMT armies, but Yen demanded Chiang's resignation from the Central Government. Yen finally broke completely with Nanking on 1 April 1930 and proclaimed himself "Commander-in-Chief of the Land, Sea and Air Forces of the Republic of China" with Feng as his deputy. In reality he had appointed himself commander-in-chief of the anti-Nanking armies.

The Junkers F 13 had been repaired but crashed again on 2 April 1930 with the Korean pilot at the controls. This time it was completely destroyed and the Korean died later from his injuries. In the meantime Junkers had been negotiating a new contract with Shansi. They offered to sell six A 35 two-seaters and six W 33 transports, both types with military equipment and armament. An order was about to be signed, but then the Carlowitz firm offered another German type, the two-seat Arado SC II trainer, and also promised to establish a new flying school. The Junkers crash did little to improve prospects, but Junkers representative Kaumann continued intensive negotiations with Chung Chi-han, since 1927 Head of the Aviation Bureau, and early in July Shansi finally agreed to order three sample aircraft: one W 33, one A 35 and one A 50 two-seat trainer. The establishment of a Junkers-run truck engine factory had been discussed as well, so two Krupp trucks with Jumo diesel engines were ordered for evaluation.

About July 1930 a White Russian pilot named Bakin, who had received his flying training in France at the end of the First World War, was employed at Taiyüan. When the war with Nanking broke out after 1 April Yen decided to send some of his aircraft to Chenchow, near the border to Honan, and some to Tsinan, Shantung, for operations against the Nanking forces. This apparently involved two Moths, a BFW and two or three Moranes. A Nanking Air Force Vought Corsair had just been flown by its crew to Shansi and became a welcome addition to Yen's air force and the crew of a Douglas O-2MC defected to Taiyüan as well.

Late in September Douglas representative Floyd N Shumaker arrived in Peking from Mukden and said that he was going to try to buy the Douglas from Yen. He hoped to sell aircraft to Mukden and intended to use the Douglas as a demonstration machine. It was, however, no longer at Nanyüan, where it had apparently been flown, or was suspected to have been concealed[5].

Yen went to Peking on 7 September to lead a new National Government (Kuo-min cheng-fu) that was set up. Meanwhile Yen's army advanced into Shantung, but was routed there by Chiang's troops. At that moment Chang Hsüeh-liang of Manchuria decided to ally himself with Chiang Kai-shek and attacked Hopei and Honan. On 2 October Peking and Tientsin were taken by Manchurian

Aircraft used in Shansi

Type	Qty	Year	
Schoettler B3	1	1925	Built locally
Breguet 14A2	2	1925	
Schoettler S4	1(2)	1926	Built locally
Junkers F 13	1	1927	In addition 1 in 1926 and 1 in 1927 not delivered
Junkers A 20			Ordered but not delivered, 1 in 1926 and 1 in 1927
Schreck FBA 17 HMT2	1	1926	
Schoettler C5			4 planned but not built in 1927
Caudron C 59			3 not delivered in 1927
Avro 504K	1	1927	Built locally (?)
BFW U 12 Flamingo	1	1929	
Morane Saulnier (AR 35EP2)	5	1929	
BFW M 23	1	1929	
DH 60 Gipsy Moth	6	1929	
Vought Corsair	1	1930	Ex-CAF. To Manchuria
Douglas O-2MC	1	1930	Ex-CAF
Junkers A 35	1		Not delivered 1930
Junkers A 50	1		Not delivered 1930
Junkers W 33	1		Not delivered 1930

Note: An American intelligence report dated 7.4.30 contains the following information, which has not been confirmed by other sources. At Taiyüan there was, it says, a "de Havilland 4b type machine, provided with a Russian-built, American Liberty engine. Although this machine has not been off the ground in four or five years, it is nevertheless carried by the Chinese as an active part of their air force."

[5] In June 1931 the only aircraft stationed at Taiyüan were two Moths and a Douglas bomber.

troops. When Chang Hsüeh-liang started to support the Nanking Government Yen withdrew the remnants of his army into Shansi. Chiang did not invade Shansi, but Nanking aircraft repeatedly bombed Taiyüan and other cities in the province. The war continued until 4 November 1930, when Yen resigned and left Taiyüan.

On 8 November Taiyüan was again raided by the Nanking Air Force and at least 50 people were killed or wounded. At 10 o'clock in the morning a Nanking aircraft appeared over the city. According to a local newspaper, two Shansi aircraft went up and engaged the raider in a machine gun combat for about five minutes. Anti-aircraft guns fired off about 100 shells, but no hits were noticed. Six bombs were dropped.

Yen Hsi-shan's departure meant the end of the Shansi Air Force. The aircraft at Taiyüan, the six Moths, probably two BFW trainers and possibly one or two of the old machines, were now taken over by the Nanking Government. The captured Corsair was turned over to the Manchurian Air Force. It was flown via Nanyüan and arrived in Mukden on 18 March 1931. Yen had fled to Manchuria in December 1930, but returned to Shansi in August 1931 and re-established himself there. He now remained loyal to Nanking, however.

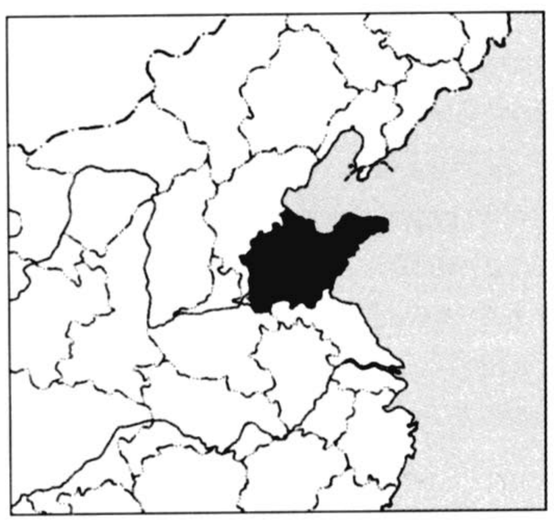
The three Junkers aircraft that were ordered in July 1930 had been shipped from Germany on 2 August. Chang Hsüeh-liang at Mukden intervened and it was soon clear

The Junkers F 13 with German pilot Van Vloten.

that the aircraft could not be landed at Tientsin because of the war. Junkers tried, without success, to sell them to Mukden instead (!), but finally decided to re-route them to Japan, where they were stored. The W 33 was sold in Japan, the A 35 (K 53) was sold to Szechwan, but captured by Nanking, and the A 50 was later demonstrated in Shanghai and sold there.

By December 1933 it was reported that there were still six Moths at Taiyüan, of which only two were serviceable. The former aircraft factory at Taiyüan was formally handed over to the Central Government in 1936 and became the No 7 Repair Shop.

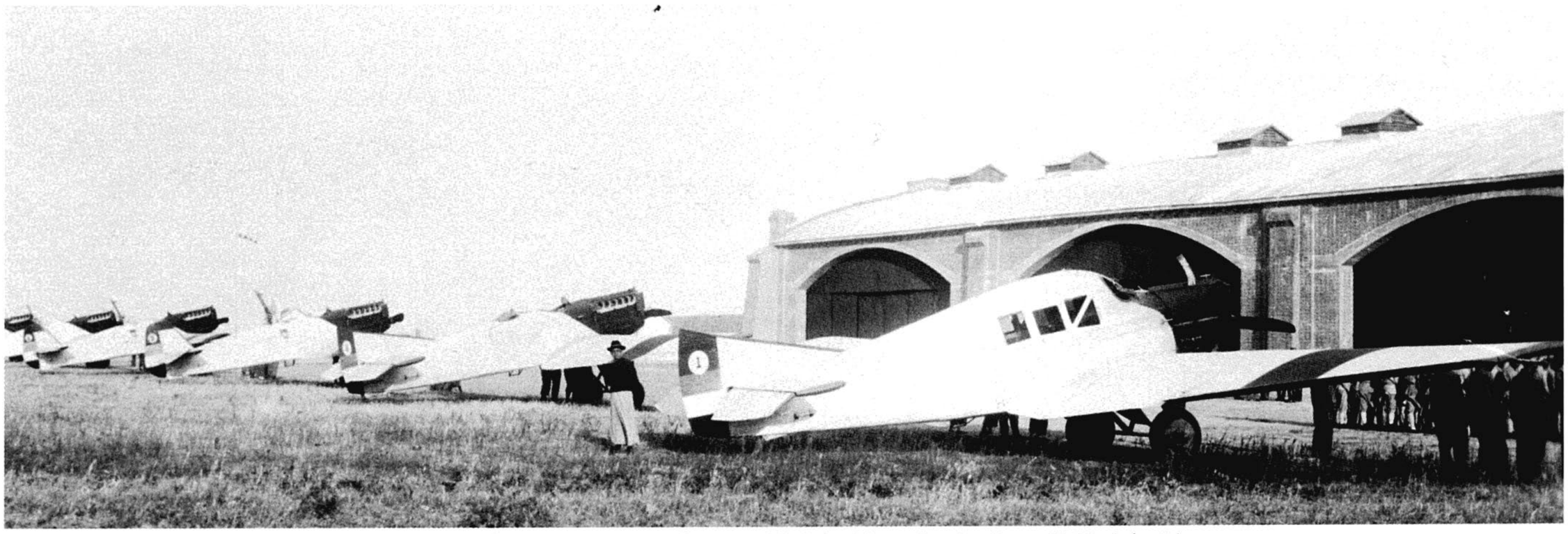
Shantung



Shantung warlord Chang Tsung-ch'ang grew up in Harbin. He joined the army and from 1922 he was serving under Chang Tso-lin in Manchuria. He built up a great personal wealth through extortion and opium cultivation and became commonly known as the "Dog Meat General". Chang Tso-lin appointed him Military Governor of Shantung on 24 April 1925.

In the period 1925-28 taxes were greatly increased and the portion of the provincial budget expended on the military rose from 50 to 89 percent! About June 1925 the Shantung Air Training Establishment (Shan Tung Hang K'ung Chiao Lien So) was established by the 1st Fengtien Army and an officer named Chao T'ien-hao was appointed commander. The school's first aircraft, six Potez VIII light trainers, were ordered by Chao and arrived from France in the autumn of 1925. A French pilot, Comte Francois de Boigne, arrived as a representative of Potez to assemble the aircraft and was engaged as flying instructor. He had earlier been employed at Mukden. In addition to de Boigne, two Japanese instructors were later hired. A large aerodrome was constructed 3 miles south-west of Tsinan city and ten single-aircraft matshed hangars were erected.

Twelve Breguet 14s and two Italian aircraft were reported to be at Tsinan and Machang in March 1926, but these probably belonged to the Manchurian Air Force. A number of aircraft were, however, at some later date transferred to the new air force at Tsinan. In April 1926 there were one Breguet and one Vickers VIM at Tsinan aerodrome, but in July the VIM crashed into a house. By mere coincidence the Shantung Air Corps, as the Tsinan-based air force was known, would get the main part of its flying equipment from the Junkers company in Germany. A two-seat Junkers A 20 and an F 13 transport had been ordered by Shansi warlord Yen Hsi-shan. The aircraft arrived at Tsingtao, but were seized by Chang Tsung-ch'ang in February 1926 and taken to Tsinan. An agreement was reached with Junkers representative Siemsen & Co on 13 June 1926. Chang paid for the "stolen" aircraft, which were then assembled by the German mechanic Hartmann, who was engaged for one year. Unfortunately both aircraft were destroyed almost



The Shantung Air Force. A number of Junkers K 53s, a Junkers A 20 (s/n 2) and a Junkers F 13 (s/n 1).

immediately, when the hangar that they were kept in collapsed during a severe storm on 14 July.

To make matters even worse, another storm damaged all other machines at the Military Aerodrome and at the Flying School on 13 September! Only one Potez VIII remained serviceable and continued to be in use for flying instruction by Comte de Boigne. Three more were repaired later, however.

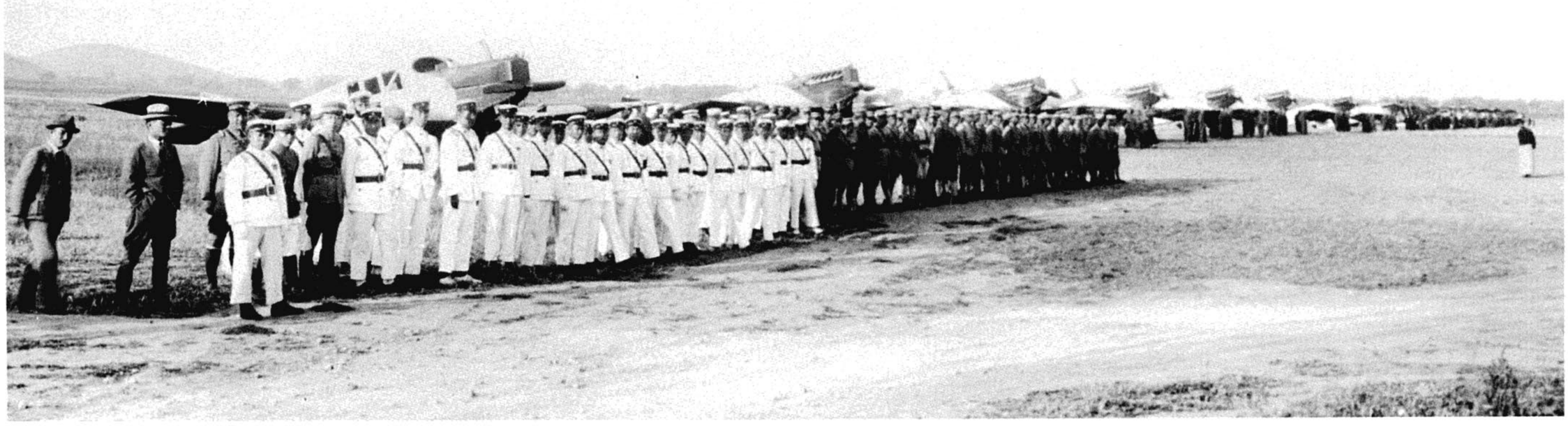
A new Junkers A 20 and an F 13 were sent out as replacements for Shansi, but when these aircraft reached Tsingtao in January 1927 Chang took them as well! They were brought to Tsinan and were flown by a Russian, referred to as "Pakin Anderlihue" (probably Andreychuk). Once again, Shantung paid Siemsen & Co, who then sent out a third F 13 for Shansi. This time the aircraft was allowed to pass and left Tsinan for Taiyüan in April. Chang did however not miss the opportunity to lay his hands on other aircraft.

On 23 January S/S "Bertram Rickmers" had arrived in Tsingtao with a two-seat Heinkel HD 24 floatplane on board destined for Shanghai (and the Junkers F 13 mentioned above). The Heinkel had been ordered by the Hydrographic Institute of the Sea Customs Authority from Firma Budich, Floock & Co, Shanghai, but was now seized and taken to Tsinan instead and fitted with a wheel undercarriage.

British intelligence (Flt Lt O'Gowan) reported in March 1927 that three Junkers and one Breguet had arrived in Tsingtao for Chang Tsung-ch'ang. He also wrote that Chang Tsung-ch'ang had probably taken over the aircraft belonging to Sun Ch'uan-feng (Shanghai/Chekiang) about February 1927. This information is doubtful, however, as most (all?) of the aircraft at Shanghai were captured by the advancing KMT troops in March. Shantung was in fact credited with four Breguet 14A2s and five Caudron C.59s by the end of that month. It is likely that Chang Tso-lin, who also sent a Vickers Vimy from Mukden at the same time, supplied these aircraft. On 20 August a Vimy, which had arrived a few days earlier from Paoting, was being assembled, but it is not known if this was the same aircraft or another one. In any case it crash-landed almost immediately after being flown for the first time.

Chün Cheng-shi was Commander of the Shantung Air Corps by May 1927, but Nieh Heng-yü later assumed this post, although he was not a pilot at the time. He learned to fly later at Mukden (after 1928)[1].

In 1927 Chang Tsung-ch'ang ordered, or intended to order, seven Heinkel aircraft with 450 hp engines, to be built by Svenska Aero in Sweden, but this deal fell through. All



Shantung Air Force personnel and aircraft lined up for inspection at Tsinan aerodrome.

Udet U 12 Flamingo.

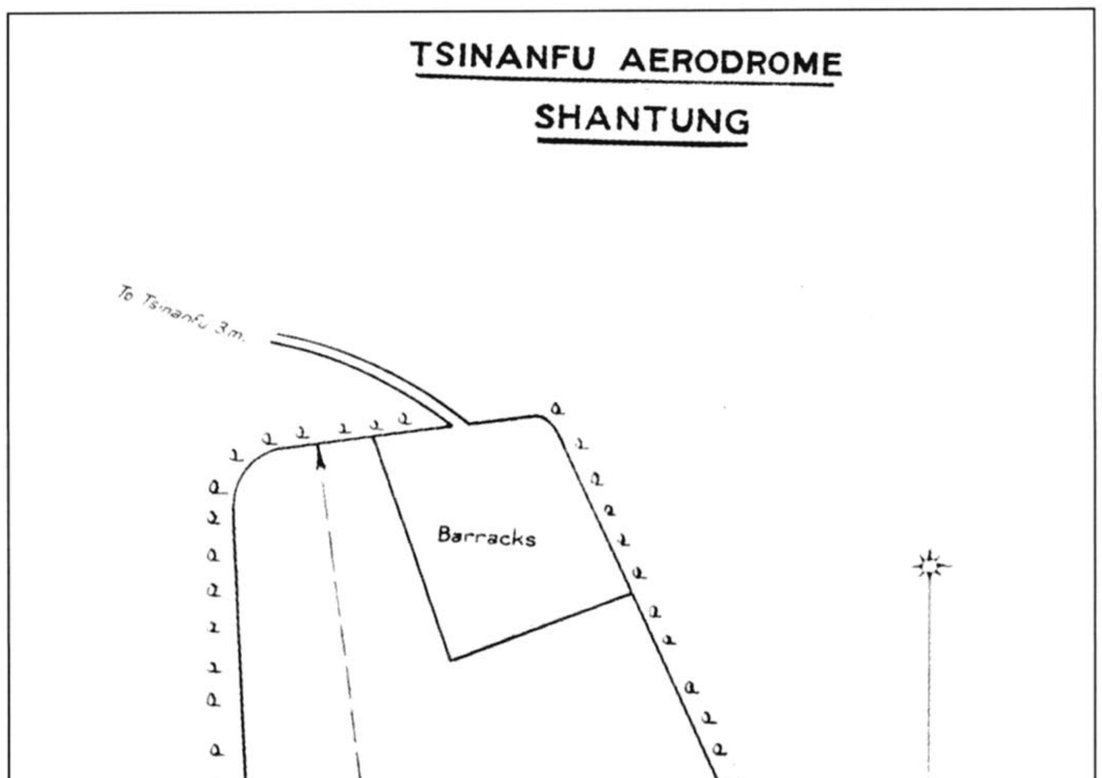
the same it was reported in Japanese newspapers and Japan protested against the alleged breech of the Armament Embargo. The sale of six Junkers K 53 two-seat reconnaissance-bombers by Siemsen & Co was also reported, although the details were not correct. These aircraft were shipped via Oslo on board the "Aker" in June, together with three Udet U 12a Flamingo trainers sold by Carlowitz & Co. The reason for the Oslo detour was that Norway was not a signatory of the Arms Embargo. The K 53s had been assembled and fitted out by AB Flygindustri in Sweden, but the engines were sent directly from Germany. The Flamingos were reportedly shipped out at the company's own risk and were sold only on arrival. Another report says that they were ordered via Eduard Meyer & Co. All nine aircraft were however addressed to Tung Ho Products Co.

The "Aker" arrived about 1 September 1927 and the aircraft were offloaded, brought to Tsinan and assembled. A German instructor, Droth, had been engaged to replace de Boigne, who had now departed. At the beginning of September there were about 15 serviceable aircraft and two Russian pilots, including Colonel Andreychuk, at Tsinan. Another German, Franz Oster, had been employed on 1 June 1926 by General Pi Shu-chen of the Tsingtao Iron Works, from 1927 the 4th Arsenal, as technical advisor and engineer. Oster had made some flights for the German Army at Tsingtao at the beginning of WW I.

The Shantung Government signed a contract with Oster, whereby he was to build an aircraft at the arsenal. The plans for the aircraft were said to have come from Caspar in Germany and a 230 hp BMW engine was to be fitted. Oster's aircraft was finished after 8 months, on 16 December 1927. It was sent by rail to Tsinan, but the pilots there refused to fly it! It was much heavier than calculated and was probably considered unsafe. It remained on the ground during the whole spring and was probably the only aircraft left by Chang Tsung-ch'ang, when the Shantung troops left Tsinan for Manchuria at the beginning of May 1928.

The Ankuochün (National Pacification Army, under Chang Tso-lin, Chang Tsung-ch'ang and Sun Ch'uan-fang) managed during 1927 to resist the expansion of the Northern Expedition, but when the KMT troops gained the upper hand in 1928 Chang Tsung-ch'ang's troop had to retreat to the north. The Junkers K 53s were participating in the fighting by the end of the year and by mid-March 1928 two had been damaged. One crashed into a mountain in thick fog. During the first months of 1928 Andreychuk drew up an airline project, which included an aerial service with Junkers aircraft between Tientsin, Tsinan and Shanghai, but the plans could never be realised.

On 28 April 1928 the aircraft inventory of the Shantung Air Corps consisted of six Junkers K 53s, two Udet U 12 Flamingos, three Breguet 14A2s, one Caudron C.59, one Avro 504K, five Potez VIIIs, one Heinkel HD 24, one Vickers VIM and the Oster aircraft. The origin of the Avro



[1] When visiting Junkers in Germany a "Generallutnant Yen Sheny" said that he became head of the Shantung Flying School in 1925, that he was appointed Commander of the Air Corps one year later, and head of the Nanking Aviation Technical Department at the end of 1928.

The aircraft built by the German Oster. It probably never flew. The Chinese inscription reads "Manufactured by the No 4 Arsenal".

is not known. The K 53s were fitted with bomb racks and a twin Lewis gun in the rear cockpit. The bombs in use were made locally. There were at least seven Russian personnel. The unserviceable Breguet and Potez aircraft had been loaded on railway trucks to be ready for the expected retreat from Tsinan.

Supported by the 2nd Army Group (Feng Yu-hsiang) attacking from Honan, the 1st Army Group of the Nationalist Army (Chiang Kai-shek) had advanced into Shantung in April 1928. When the KMT troops cut the railway line between Tsinan and Tsingtao, the Ankuochün units fled from Tsinan to the north. Apparently Nieh Heng-yü managed to bring all aircraft, except for the worthless Oster machine, to Manchuria, where they were incorporated into the Manchurian Air Force. Chiang Kai-shek entered Tsinan on 1 May. Japanese troops now moved in and on 3 May fighting between them and the 1st Army Group broke out. The Japanese seized Tsinan airport.

In the meantime Chang Tsung ch'ang had ordered another four Junkers K 53s from Siemsen & Co, which left Sweden on board the "Bestik" in May 1928. The ship went to Hulutao, but was not allowed to enter port there. It finally arrived at Newchwang on 27 July and offloaded the Junkers aircraft, which were taken over by the Manchurian Air Force together with the other Shantung aircraft. The remnants of Chang Tsung-ch'ang's troops were rounded up in September, but not until April 1929 could the Nationalist Government gain control of the whole Shantung province.

A few years later the aerodrome at Chang Chwang, 3 miles west of Tsinan railway station, was administrated by a new Tsinan Provincial Aviation Bureau and had received a modern hangar for 12-15 aircraft. It had been little used for a number of years until it became included in the CNAC and Eurasia network. In 1932 the new Military Governor of Shantung, General Han Fu-chü, expressed an interest in possessing a few aircraft of his own. He asked for the loan of two Chinese Navy seaplanes from Tsingtao for use in the pursuit of brigands, but his request was turned down and Nanking frustrated all other attempts to acquire aircraft.

At about the same time Shantung native Sun Tung-kang went to Germany to learn to fly at the Deutsche Verkehrsflieger-Schule in Braunschweig. He acquired a two-seat Klemm L 26 II with the intention to fly it all the way back to China. He planned to leave Germany in August 1932, but the flight was apparently postponed until June 1933. The aircraft, which was named "Chiu Kuo" (National Salvation), finally arrived at Tsinan on 2 August. Sun also flew to Nanking and landed at Nanyüan, Peking, with his aircraft on 27 October, after a tremendous flight all the way from Europe and around China.

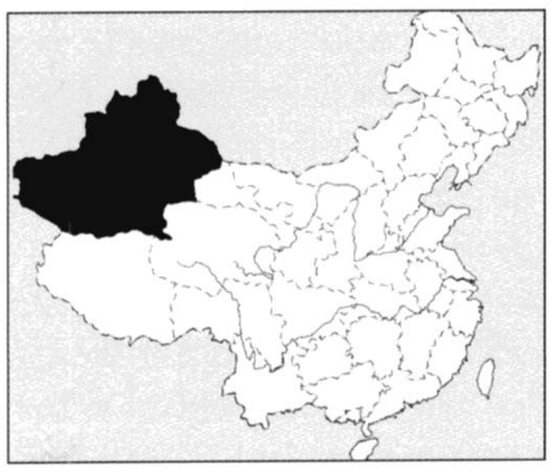
Aircraft used in Shantung

Type	Qty	Year	Remarks
Potez VIII	6	1925	
Junkers A 20	2	1926	Second example was s/n 2
Junkers F 13	2	1926	Second example was s/n 1
Vickers VIM	1	1926/1927	
Breguet 14	>4	1926/1927	
Caudron C.59	>5	1926/1927	
Vickers Vimy	1-2	1927	
Junkers K 53	6	1927	S/ns 3-8. Another 4 were delivered directly to Manchuria
BFW U 12a	3	1927	
Heinkel HD 24	1	1927	
Oster	1	1927	
Avro 504K	1		
Klemm L26 II	1	1933	
Avro Avian IVM	1	1934	
DH 82 Tiger Moth	6		Contract cancelled 1934
Waco "F"	1		Probably MNF. Not confirmed
DH 60 Moth	1		Not confirmed

Sun Tung-kang's Klemm was used by Han Fu-chü as a makeshift bomber for "bandit suppression" later in 1933. In addition Han Fu-chü had two small trainers bought earlier and these were used as bombers as well. In January 1934 he signed contract for the purchase of six de Havilland Tiger Moth trainers from Arnhold & Co, which were to be delivered within 3-6 months and were to be fitted with machine guns and bombing gear. Han had plans to smuggle them into Shantung without the knowing of the Nanking Government, as he was unlikely to get the necessary permit for their import. In fact the contract was declared void if an import permit could not be obtained and that was just what happened so no Tiger Moths were ever delivered to Shantung.

On 18 March 1934 an Avro Avian IVM was named "Yüeh Hui" and presented to Sun Tung-kang in Shanghai. A few days later he was appointed to organise an "Aviation Academy" at Tsinan. It was reported in April that Han Fu-chü had started a flying school under Sun Tung-kang, which used Sun's Klemm, two old trainers, and two aircraft presented to Sun in Shanghai. An American report dated 1 March 1935 credited Shantung with one Klemm, one Waco F trainer and at least one de Havilland Moth (possibly the Avian), but this information has not been confirmed. Han Fu-chü was still Military Governor of Shantung when the war with Japan broke out in 1937. In December he evacuated Tsinan in an armoured train and fled to Kaifeng, where he was finally executed on 24 January 1938.

Sinkiang



Due to its geographical position in the extreme west of China, Sinkiang province had little in common with the rest of the country. Intensive trade relations developed with the Soviet Union and the province came under strong Soviet political influence. On 1 October 1931 local Military Governor and warlord Chin Shu-jen had signed a trade agreement with the USSR, but this contact was not sanctioned by Nanking. The Central Government had no influence in Sinkiang, however, which was in reality almost completely independent. As a consequence of the agreement the province was fit into the Soviet economy and Soviet advisers and specialists of all sorts were sent in.

In November 1931 S Burchan, the Governor's representative in Berlin, was negotiating the purchase of two Junkers F 13 transports. No order was placed, however, and as a consequence of Sinkiang's geographical position aircraft for the local air force were instead supplied by the Soviet Union.

The Governor purchased two Russian R-1 (DH.9A) aircraft in September 1931 and hired two Russian pilots to fly them. The aircraft arrived at Tihwa (Urumchi), where the headquarters of the air force was set up, on 23 December 1931 and A Volynchenko headed the small group of Russian personnel. By 12 May 1932 Sinkiang was arranging to buy two more Russian aircraft and additional Russian instructors, pilots and materiel was expected. Eight aircraft arrived in July 1932 - according to one source two R-1s, three Polikarpov U-2 trainers and two Kalinin K-5 passenger transports. After a revolt during the first part of 1933, Chin was overthrown by a coup at Urumchi on 12 April and was succeeded by Sheng Shih-ts'ai.

New deliveries of Russian aircraft followed in 1933. In November that year a group of Russian aviators, including pilots S Antonenok, F P Polynin, K Shishkov and T Churin, were sent via Semipalatinsk to Ayaguz in eastern Kazakhstan. At that place a number of Polikarpov R-5 reconnaissance and bombing biplanes intended for Sinkiang were assembled and fitted with skis for the flight to an airfield near the Sinkiang border. The Russians had already begun to prepare for a flying school at Urumchi, but this work was suspended when General Ma Chung-ying started a rebellion against Sheng.

Sheng asked the Russians for immediate help. The Politburo decided to give full aid to the Sinkiang ruler and ordered two brigades of GRU troops with air units of the Red Army to clear the roads and liquidate the rebellion. Bombs were shipped to the border in January 1934, but the

Polikarpov R-5s of the Sinkiang Air Force.

rebels blocked the road to Urumchi so they could not be delivered by truck. The Soviet Air Force took charge of the shipment and it was decided to "deliver" the cargoes by dropping the bombs on the rebels. Three R-5s were armed and loaded with bombs and sent off from the airfield near the border to attack the rebels in the vicinity of Urumchi. Pilot K Shishkov took off first and landed on the airfield of the besieged fortress after the attack.

Soviet troops broke through to Urumchi and soon the pro-Soviet governor was established in power again. In order to strengthen his position 10,000 Sinkiang troops were to be equipped by the USSR. Russian advisers were to be sent, and roads, aerodromes and hangars were to be built at different places.

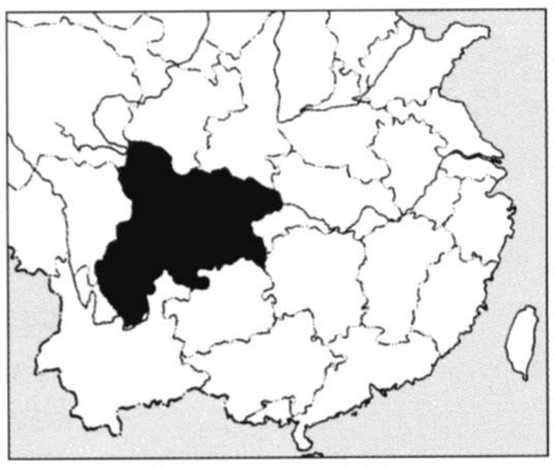
A number of R-5s and Polikarpov U-2 trainers were handed over in the course of 1933 and General Wang was appointed head of the aviation school set up with the U-2s. There was a Russian adviser, Polynin, at the school, and other advisers included Belitsky, Mamonov and Grigorev. Flying instructors Andrianov, Dobrogaev, Kalinin, Kolokoltsev, Mizersky, Naidenko, Shnei, Sorokin and others started to train local student pilots, but found it very difficult to select competent candidates.

In the autumn of 1934 a violent hurricane destroyed all 18 aircraft that were present at the Urumchi aerodrome. After this the Russians returned home. A new group was sent out, however, but nothing is known about its achievements. One source states that a total of twelve R-5s were delivered to Sinkiang free of charge.

On 1 January 1936 Sheng signed a new agreement with the USSR and in September 1937 Soviet Army units were again sent to the province. A new Sinkiang Aviation Unit was set up with Soviet support and officers were selected for training, which began in March 1938. U-2s and R-5s were again used, but it is not known if this was new aircraft or those supplied earlier. In 1940 training was suspended but was resumed again in 1941, when six Polikarpov I-15 and two I-16 fighters were allegedly delivered.

Sheng reached a political agreement with the Nationalist Government in 1942, however, and in September that year Communist Party members, including the pilots and ground crew of the Aviation Unit, were rounded up.

Szechwan



Szechwan warlord Marshal Liu Hsiang with headquarters at Chungking stayed more or less independent of the Central Government for a long time. During the period 1927-1934 the Nanking Government was unable to intrude into Szechwan's internal affairs. The national Military Disbandment Conference of 1929 ordered Szechwan to reduce its army, but that had little effect. Regardless of Nanking's prohibitions on arms purchases Liu Hsiang bought large quantities of weapons through agents in Chungking. There were other principal army commanders and warlords in Szechwan, but Liu Hsiang and Liu Wen-hui were stronger than any of them. After 1926 Liu Hsiang's army was called the 21st Army and Liu Wen-hui's the 24th. The combined armies of Szechwan were large in numbers, but quality was rather low, however.

Strange enough, considering its independent status, it seems that Szechwan acquired no aircraft until in the summer 1929, when a Waco 9 and an American Eagle A-129, both three-seat biplanes, were purchased from the L E Gale Company. By April a British trained engineer named Chu Mou-ch'ing was "Director of Civil Aviation" in Szechwan.

The American aircraft were delivered from Hankow to Changsha in October 1929 and arrived in crates to the new aerodrome at Kwang Yang Pa (Kuan Yin Pa). The aerodrome was located on an island in the Yangtze river 13 miles downstream from Chungking (9 miles east of the city) and it was completed with one hangar and a workshop early in 1930. There was also a landing ground on the riverbank outside the Nan Chi city gate of Chungking, but this area was under water for 4-5 months in the year. General Chiang Kuei was appointed head of the Aviation Bureau, later called the 21st Army Air Force. He had received his flying training in Peking and in the USA

A German pilot, August Haensel, who had earlier been working for the Chinese Navy, was engaged by L E Gale to assemble and test the aircraft. He arrived in February 1930 and made a number of flights. He was then employed by the 21st Army (Liu Hsiang) as flying instructor for one year. By the end of March he had already been dismissed, however, owing to an unfortunate bombing accident. He had been more or less forced to participate in a bombing demonstration during a flying display at the beginning of the month although he had refused. Several Chinese spectators were killed when the bomb was blown out of his hand while flying the Waco. The bomb fell close to a number of soldiers and many were injured or killed. Haensel was brought for trial and sentenced to 14 months imprisonment, but was allowed to leave immediately after the trial.

Existing communications often determined possible

sources for war materiel acquisitions in the Chinese provinces. Chungking could be reached by boat from Shanghai, but a Central Government permit had to be obtained for any aircraft coming that way. Aircraft could also be flown in from the south, however, from French Indochina, and this is probably the reason why France soon became the main supplier of aircraft to Liu Hsiang.

A new aviation adviser, French Captain Dutheil, arrived in April 1930 and with him came two new aircraft. Four French Potez bombers, two of them with interchangeable wheel and float undercarriages, had been ordered and their arrival had been expected for almost one-and-half year. They had been purchased from the French Government Disposals Department through Wu Shu-chi, a Szechwanese student in France, and Dr Ki Shu-ping, former Commissioner for Foreign Affairs.

After leaving France in April 1929, the aircraft reached Haiphong in French Indochina in August and had then been brought to Hanoi. It was intended to fly them, initially from Saigon and later from Hanoi, to Chungking, but it was decided to wait until the aerodrome at Kwang Yuen Pa had been completed. In the meantime they were stored in Hanoi. There was a change of plans, however, after one of the aircraft had crashed and been badly damaged on the delivery flight, so they were then instead shipped by boat to Shanghai and from there up river to Chungking.

The two aircraft arriving with Captain Dutheil were Potez 33 bomber monoplanes with 240 hp Salmson engines. Captain P Schertzer and a civil pilot named Devoyod arrived a little later with the second pair of aircraft, including the damaged example. These were described as "amphibians" and probably were those that could be fitted with floats. Lewis machine-guns were acquired separately. The first attempt to fly one of the Potez bombers at Chungking resulted in a crash and none of them were flown again after this incident. The landing ground was bad and very little flying instruction had been accomplished because the two American trainers had also been damaged.

Three Breguet 14A2s were ordered early in 1930 and another three were added later in the year. All were bought from the French Government Disposals Department and were delivered from Indochina. Captain Schertzer and another of the French pilots remained to assemble the first of the new aircraft, which arrived in April. Liu Hsiang was dissatisfied with the French aircraft, however, and the Potez bombers were clearly under-powered for the conditions at Chungking. It was planned to re-engine them and an order for three 500-hp Jupiter engines was contemplated for some time, but this scheme was dropped in 1931. In June one of the Breguets made a number of successful local flights and at the beginning of August the second consignment of this type arrived.

Haensel had suggested the purchase of de Havilland Moth trainers and on 13 October 1930 representatives of the 21st Army ordered four Gipsy Moths, two float undercarriages and an extra engine from Arnhold & Co in Shanghai. The aircraft were shipped from England at the beginning of November and reached the port in Chungking

Fairchild KR-34. Aircraft of this type were acquired by Szechwan.

at the end of February 1931. A formation flight over Chungking was accomplished with the new trainers on 10 March.

The 21st Army Air Force now possessed two Potez monoplanes, six Breguets, of which only two were serviceable, the four Moths and the American Eagle. The Waco had crashed a couple of weeks earlier and had been written off. There were six fully qualified Chinese pilots and two French pilots. None of the Chinese pilots had been trained locally, however. One of the Breguets was equipped with a four-bomb rack under the fuselage, and the Moths carried two locally made single-bomb racks on either side of the fuselage. The bombs were of local manufacture.

A new two-seat Potez 25 reconnaissance-bomber had been ordered and had arrived in Shanghai and by March 1931 Liu Hsiang's representatives were negotiating its release by the Central Government for shipment up river. Liu was planning to purchase six more of this type and was also negotiating with Arnhold for six additional Gipsy Moths, which they had available in Hong Kong. The Potez bomber reached Chungking in May.

By September 1931 the following aircraft were serviceable: the new Potez 25, three Moths, the American Eagle and two Breguets. One of the old Potez bombers was also in order, but was not flown. One Moth had crashed into the river on 18 June when the passenger, one of the general's sons, "lost his head and mishandled the controls". He was killed and the machine was wrecked. There were two brick hangars and a repair shop at the aerodrome and a new hangar was under construction.

In the autumn of 1931 Liu Hsiang purchased from L E Gale two Fairchild KR-34-CA light reconnaissance-bombers. Originally part of a consignment of four sold to Ho Chien, Hunan Provincial Government, they had been converted from two-seaters into single-seaters and had been fitted with two forward-firing Colt machine guns and a bomb rack under the fuselage. When the last two were not paid for by the original buyer they were instead sold on very favourable terms to Szechwan. The fuselages were delivered in November 1931 and the wings followed some time later.

In September 1932 the equipment of the 21st Army Air Force consisted of four Breguets, one Potez 25, one Potez

32, one American Eagle, two Fairchilds and two Moths. The new hangar and a new workshop were still under construction and there were landing grounds at Liangshan, Wanhsien, and at Kweiyang, Kweichow Province. The French instructor, Captain Schertzer, had recently been employed by Yünnan and had transferred there. French Adjutant Langlet was Chief Mechanic and Vice-Commander Chiang Kwei was still head of the Air Force. There were eight pilots and six mechanics.

Captain Schertzer managed at the end of 1931 to make the first longer test flight with the Potez 25, when he flew from Chungking to Ichang in Hupei and back. Liu then ordered from Société Francaise du Haut Yangtse five new Potez 25TOE bombers, two spare engines, two sets of floats, spare parts and six Hotchkiss machine guns. The aircraft were to be shipped up the river to Chungking after arrival in Shanghai, but this scheme was apparently changed later. Schertzer was sent to Kweiyang in December to supervise delivery from Hanoi by air.

Five pilots had been sent to France for training and twelve flying cadets started their instruction at Chungking in the spring of 1932. In April 1932 the new hangar was almost ready and each of the hangars was capable of housing 6-10 aircraft. The aircraft inventory now consisted of the two Fairchilds, two Moths plus one under repair and one completely destroyed, the American Eagle, the Potez 25 (with a machine gun in the rear cockpit and bomb racks under the wings), the Breguet 14s (with machine guns and bomb racks) and two Potez cabin monoplanes. One of these had a turret mounting aft and was a Potez 33, the other probably was a Potez 32 transport. The five new Potez 25TOEs were at Haiphong, where Schertzer and other personnel were to take delivery.

In September 1932 it was reported that two of the five Potez 25TOEs had arrived on 8 July, but they had not at that time been transported to the aerodrome. According to another source the efforts to deliver these aircraft by air from Hanoi were unsuccessful up until late 1932, with the loss of two en route. In any case, it seems that all five eventually reached their destination.

By early 1933 there were 12 pilots and a total of 19 aircraft (six Potez 25s, one Potez 33, six Breguet 14A2s, three Moths, two Fairchilds and one Eagle), which were separated into two squadrons. During recent operations against Chengtu the Potez 25s had been used for bombardment and the Moths for liaison. It was now decided to organise a new aviation school from the aircraft and personnel of the squadrons, and this was done at the beginning of 1933. Schertzer became Chief Instructor and 23 student pilots were enrolled. The Moths were used for primary training and the Breguets for advanced training. Both Schertzer and Langlet left Szechwan at the end of 1933, however.

There were plans to purchase new aircraft, but this had to be postponed due to the difficulties associated with getting import permits from the Central Government. In November 1933 Liu Hsiang had reportedly ordered another five Potez "fighting" aircraft, but this might have been a mix-up with the five already delivered. At the end of the year Szechwan was reported to have 21 aircraft. There were aerodromes at Chungking, Chengtu, Suining and Luchow. Liu Hsiang's inadequate finances hampered development of aviation, however, and this had also been the reason for Schertzer's departure.

In 1933 Central Government troops entered Szechwan in pursuit of Communist forces, but soon withdrew and in the following year the province was suffering from severe economic troubles and there was large-scale Communist activity in the north. In November 1934 Szechwan's long era of isolation came to a temporary end when Liu Hsiang travelled to Nanking to meet with Chiang Kai-shek for negotiations. A new provincial government was formally established at Chungking on 2 February 1935 and more Nanking troops entered the province. This was not to be the end of the Szechwan Air Force, however.

A report dated April 1936 on the airport at Chengtu mentioned that there was one CNAC hangar, four or five old matshed hangars and six new hangars under construction, and that it belonged to the local military. In October 1936 Liu Hsiang was again augmenting his air force independently of the Central Government, although it is not known what type of aircraft he added to his inventory. Nanking had obviously not managed to gain control of the Szechwan Air Force. A general report on aircraft in China for the last quarter of 1936 credited Szechwan with five Potez aircraft.

The old irritation between Liu Hsiang and Chiang Kai-shek grew again in 1936 and the Sian Incident in December damaged their relations further. Early in 1937 Central

Szechwan Air Force 1935

In March 1935 an American report detailed the Szechwan Air Force, although no date for the information was given: one American 100 hp, one Moth, one American 165 hp, two Potez 95 hp, four Potez 32 (230 hp) and five Breguet 300 hp. Strangely the Potez 25s are not mentioned, which seems to put the authenticity of the information in question. The Potez 95 hp ought to be the Potez 36, but no such aircraft were reported by other sources.

Aircraft used by Szechwan

Type	Qty	Year	
Waco 9	1	1929	
American Eagle A-129	1	1929	
Potez 33/32	4	1930	Including at least one Potez 32
Breguet 14A2	6	1930	
DH 60G Moth	4	1931	
Potez 25	1	1931	
Fairchild KR-34-CA	2	1932	
Potez 25 TOE	5	1932	
Type?	?	1936	

In addition, Liu Wen-hui at Chengtu tried to obtain German aircraft in 1929, Moths in 1930 and Avros in 1931. A Junkers K 53 ordered by him was seized by the Nanking Government in 1932.

Government troops began to pour into Szechwan and both sides prepared for war. The crisis passed in early June 1937, however, when Liu agreed to turn over ten of his aircraft to Nanking and then moved his troops out of Chungking.

New steps were now taken to place the Szechwan Army and Air Force under firm central control and it was decided that all troops, aircraft, airfields, arsenals and repair shops were to be controlled by the National Government. A special conference was opened in Chungking on 6 July under the National Government Minister of War Ho Ying-ch'in to arrange the carrying out of the changeover. The war with Japan broke out in July 1937 and in November-December the Central Government moved from Nanking to Chungking as a result of the Japanese advance into China.

Other Szechwan Generals

Besides Liu Hsiang several other militarists in Szechwan tried at different times to obtain their own aircraft. None of them succeeded, however. General Liu Wen-hui came closest to starting his own air force, but Liu Hsiang, who incidentally was his nephew, did not allow anyone else in the province to acquire aircraft.

General Teng Hsi-hou, commanding the 28th Army at Chengtu, was anxious to purchase aircraft from Arnhold in Shanghai in the summer of 1930, but refrained from this when it became clear that they would never get past Liu Hsiang. In September 1930 Tien Sung-yao at Tungchwan was reported to have ordered a Belgian aircraft, and there were rumours that Li Chi-hsiang at Suining had ordered some Japanese aircraft, but Nanking refused to grant an import permit. At about the same time General Liu Wen-hui negotiated unsuccessfully for 10 Gipsy Moth trainers.

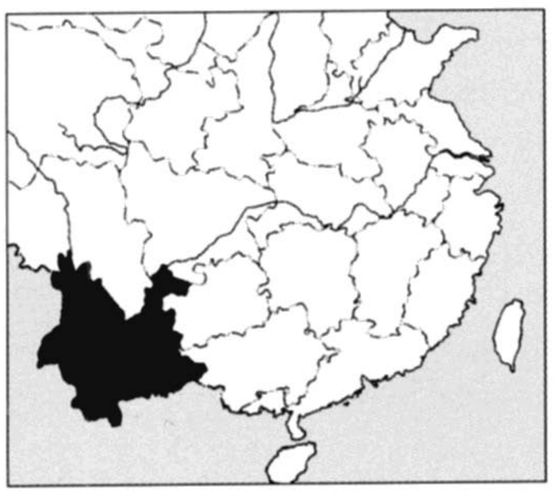
On 25 November 1930 it was reported in the press that four German aircraft ordered by Liu Wen-hui for a Chungking-Hankow airline had arrived in Shanghai by steamer. Liu was at that time Chairman of the Szechwan Provincial Government. The aircraft were allegedly forwarded to Szechwan for assembly there, but nothing further is known about this affair and there is no other trace of these aircraft. Liu, who had his headquarters at Chengtu, desired to obtain at least ten aircraft, but had little chance of securing the necessary permit from Nanking. In June 1931 his agent was in Shanghai trying to purchase Avro aircraft.

On 15 August 1932 an armed Junkers K 53 two-seat reconnaissance-bomber arriving from Peking was impounded by Central Government troops at Loyang. The crew, a Russian pilot named Andreychuk[1], Wilhelm Trendel, a representative of the Siemsen Company, and a Chinese employee of the Asiatic Petroleum Company, was imprisoned and taken to Hankow. It turned out that Siemsen had brought the Junkers to Peking in April with an import permit from Chang Hsüeh-liang. They had first tried to sell it to him, but it had been decided to move the Junkers and all other aircraft from Peking due to political unrest. In a fake transaction the Junkers was then sold to Boixo Frères and flown to Loyang. Liu Wen-hui was now the real owner of the aircraft and Chengtu was its final destination. It was sent to Hankow and was taken over by the Central Government.

About September it was reported that two French aircraft were being delivered to Chengtu, but one of them crashed en route. It was apparent that Liu Wen-hui was preparing a war with Liu Hsiang and the hostilities finally broke out in December 1932. After heavy fighting in Chengtu the debacle ended with the defeat of Liu Wen-hui.

[1] Andreychuk had previously been employed in Shantung.

Yünnan



T'ang Chi-yao, who ruled Yünnan Province from 1916, was nicknamed "the King of the Southwest". The Yünnan Army was regarded as being the best of the armies in South China, but opium sales came to constitute the main revenue source for both the army and the province. T'ang was overthrown on 8 February 1921 but returned to power in the following year.

A Yünnan Aviation Department was established at Yünnanfu (later known as Kunming) in 1920. The head of the department, Chan Yim-chong, who was also the only pilot in Yünnan, had been trained in the USA. He contacted a British company in the summer of 1920 and asked if they could supply Avro 504 trainers to Yünnan. The answer was negative in regard to the Arms Embargo and the Yünnanese then turned to France. Yünnan was connected to French Indochina by a railroad running from Haiphong via Hanoi to Yünnanfu, which made France the province's natural foreign trade partner and also supplier of aircraft.

Two French aircraft of unknown type were reportedly purchased from the Société Asiatique in November 1920. Nothing more was heard of this, however. The Aviation Department was apparently reorganised in June 1921 and 15 people, including pilots, were employed. A new Yünnan Aviation Bureau (Yün-nan hang-k'ung ch'u) headed by Liu P'ei-ch'üan (Lao Pui-chuen) was established on 1 May 1922 and sometime in the autumn a dozen students were sent to Hanoi for flying training. An aircraft described either as a single-seat fighter with rotary engine delivered from Tonkin as a sample, or as a small second-hand French trainer with

In the background is one of the Breguet 14s delivered to Yünnan.

80 hp engine, arrived at Yünnanfu on 31 October 1922. This aircraft was wrecked during the first attempt to fly at a military encampment near Yünnanfu when it crashed soon after take-off.

A British firm, Jardine Matheson & Co, Shanghai, received an enquiry for aircraft but could not sell any because of the Arms Embargo. Instead six Breguet 14 A2s were ordered from the French firm Poinsard et Veyret at Tonkin in September 1922. The first three arrived at Haiphong in January 1923 and were immediately sent to Yünnanfu and the other three followed soon after. They were supplied from French Indochina stocks and at least two were second-hand.

In April 1923 an aviation school was established and two of the Breguets were used for training. The aerodrome was situated at Wuchiapa, 5 km south of Yünnanfu railway station. A pair of French officers, Capitaine Arbitre and Adjudant Francis, arrived in March with French mechanic Martin and were employed as flying instructors. At this time there was only one qualified (American trained) Chinese pilot, probably Chan Yim-chong, but there were about 20 students and the arrival of a number of Cantonese pilots trained in Hanoi was expected.

In August 1923 Arbitre returned from a trip to Hanoi, where he had acquired machine shop equipment for making repairs. Four of the six Breguets had by then been erected. An Ansaldo SVA 9 was purchased from Canton early in 1923, but it crashed on its first flight about August 1923. It had been assembled in Canton by a Mr Christiansen from the spare parts left behind by the Italians after their Rome-Tokyo flight in 1920, but the tail section had been altered by him. For some time it was used as a taxying machine for ground training, but its engine was then removed and used in a motor boat.

A number of partly French-trained Annamite mechanics were employed and in September 1923 a repair shop was being equipped with machinery that had just arrived from Hanoi. By October three of the twenty flying students had soloed on the Breguet. One of the Breguets crashed on 4 October 1923 and another met with the same fate some time later.

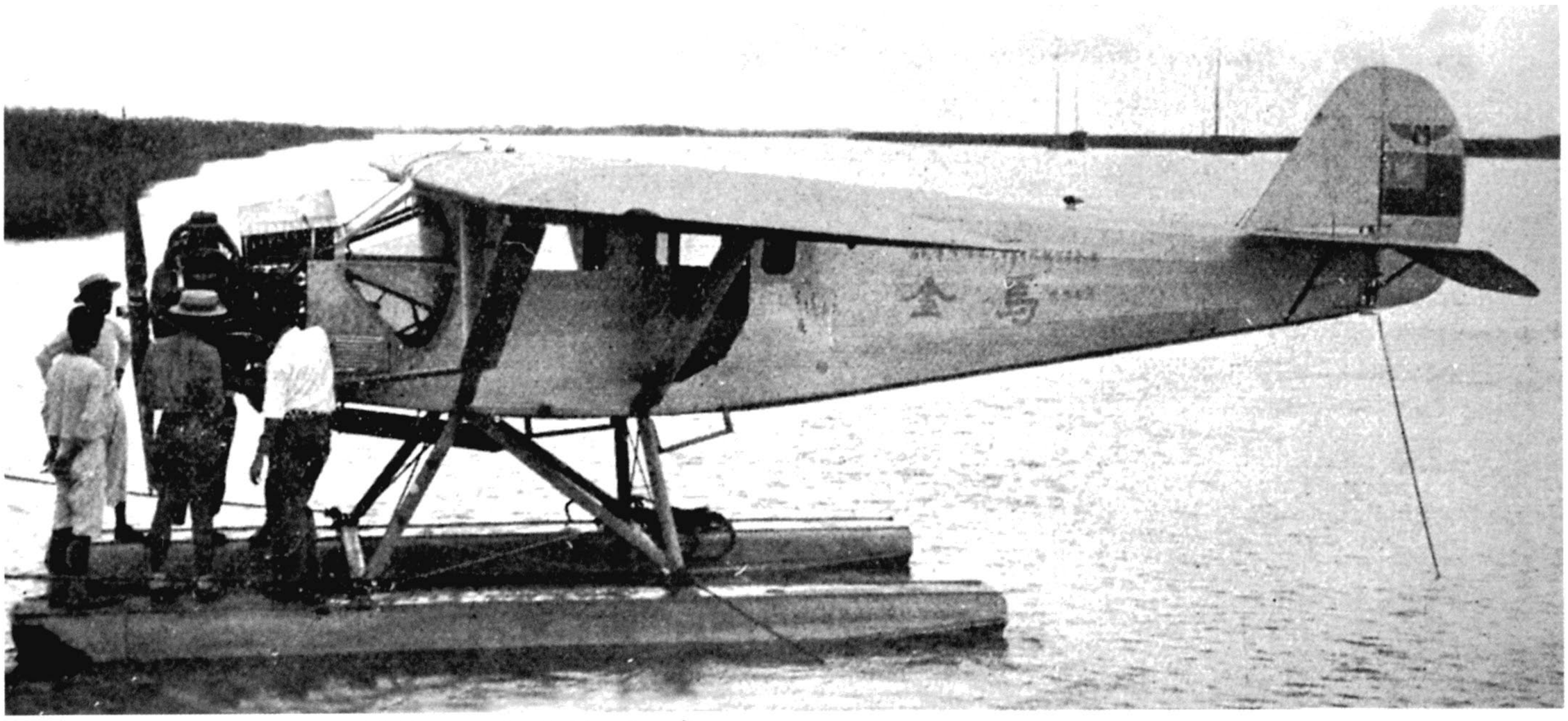
Late in 1923 six Caudron G 3 trainers with three spare engines were purchased and brought up by train through Tonkin and by December 1924 the Yünnan Aviation Bureau had four Breguet 14s and six Caudron G 3s. Arbitre, Francis and Martin were still employed, and there were nine Annamite mechanics, but still no Chinese mechanics. There were 60 Chinese pupils and pilots, including one woman, and nine of the students had flown solo. A British intelligence officer reported that progress was slow because the Yünnanese were "noted for their stupidity"(!). Without doubt an example of British prejudice rather than of Chinese inferiority.

The first class of about 37 students graduated in February 1925. Later in the year seven Breguets were flown to Kwangnan, near the Kwangsi border, to reconnoitre the movements of invading Kwangsi forces. Only four were able to make the return trip by air. On 9 August 1925 two Caudron trainers collided and crashed during a practice flight and three Chinese pilots and a mechanic were killed. This reduced the number of serviceable machines to four Breguets and two Caudrons. In 1926 there were still four Breguets and six Caudrons, but only two Breguets and one Caudron were serviceable. The second class of the flying school, about 30 students, completed their course in May 1927.

T'ang Chi-yao remained in power until 1927, when he was overthrown by General Lung Yun. The new provincial administration was reported to be "financed by opium and staffed by nepotism". Nanking was later to appoint Lung Yun Commander of the 13th Route Army.

On 11 January 1928 two new Breguet 14s arrived in Yünnanfu from Tonkin. They were consigned to the French Consul and had been ordered by the Yünnan Government via a Mr Malortigue. A contract for four more Breguets or Caudrons was being negotiated, but was never concluded. Commander Liu P'ei-ch'üan formed a "Committee for Planning of Commercial Aviation between Yünnan and Kwangtung" (Tien-Yüeh shang-yung hang-k'ung ch'ou-pei wei-yüan-hui) in 1928. No such plans were realised, however, until the South-West Aviation Company was established much later.

A representative of General Lung Yun went to Hong Kong and ordered two Ryan Brougham cabin monoplanes from the USA. One arrived in Hong Kong in April 1929 and was assembled at Kai Tak under the supervision of Earl F Baskey, representative of L E Gale. Several trial flights were made and then Liu P'ei-ch'üan flew via Pakhoi to



The Ryan B-5 Brougham named "Ching-ma" (Golden Steed).

Yünnan with mail and two passengers on 27 April. This aircraft was named "Kunming" and the other, which was fitted with floats, was named "Ching-ma" (Golden Steed). It was flown by Liu P'ei-ch'üan from Canton to Nanking in August and in September he flew it from Shanghai to Nanking. It was reported that both aircraft were used for the transport of opium to Kwangtung.

In September 1929 the Nanking Aviation Department of the Ministry of War made known that they had taken direct control of the Yünnan provincial air force, but this seems to have had little real effect as the Yünnan military forces remained more or less independent of the Central Government. The Yünnan Aviation Bureau was reported to own seven Breguets, one Caudron, one Ryan and seven other unserviceable aircraft. There were seven spare 300 hp Renault engines and some 80 hp Le Rhones.

Late in the year bombing expeditions were made to suppress bandits in southern Yünnan. The bombs used were locally made. On 6 November 1929 one of the Ryans piloted by Colonel Liu, Chief of the Aviation Bureau, made a flight from Canton to Wuchow, before departing for Nanking on a passenger flight with the Governor of Kwangtung. He had to make an emergency landing near Wuchow due to engine trouble, however, and the aircraft was completely wrecked but Liu escaped with only slight injuries. On 15 January 1930 two Yünnan aircraft got lost in fog and crashed and both pilots were killed. The damaged aircraft were brought back to Yünnanfu on 23 January.

French pilot instructor Captain P Schertzer had arrived in Yünnan with the two new Breguets in mid-January 1928. He transferred to Szechwan in the spring of 1930, however, but returned to Yünnan again about August 1932. French mechanic Martin remained until 1930. Liu P'ei-ch'üan still served as Commander of the Yünnan Air Force, but he was later replaced by Colonel/Squadron Leader Chang Chih-kao[1].

By January 1930 Chang Meng-kuei was "Chief pilot" and there were eleven other qualified pilots, including Ch'en Hsi-sha, and ten student pilots. There was one chief mechanic, four Annamite mechanics and 20 Chinese workers. By the end of 1931 there were some 50-60 students at the flying school, including ten females - perhaps an interesting fact! Besides Wu Chia-pa 5 km south of Yünnanfu there was another aerodrome at Mengtze and small fields at Kaihwa, Kwangwan, Kutsing, Fungchwan, Howyentsing, Tsuyung, Talifu, Likiang and a few other places. Most of these were only emergency landing grounds. On 19 December 1930 five French Potez 25s visited Yünnanfu.

An example of the Potez 32 seven-seat passenger transport monoplane was acquired second-hand in October 1930 and in 1931 the Yünnan Aviation Bureau ordered six two-seat Arrow Sport trainers from the USA. The French Indochina authorities were much displeased when the new order was not placed in France, however, and at first refused to permit transit. The aircraft arrived at Haiphong in January 1932 and were detained there until Arrow sales manager James W Fisher managed to despatch them to

Yünnan Air Force 1927

On 25 October 1927 a British intelligence officer visited Yünnanfu aerodrome. There were two Breguet 14A2s, two Caudron G 3s and six spare engines. Commanding Officer was Colonel T'uan. There were six pupils, of which four could fly the Breguet, and a total of 36 officers. Francis and Martin were still employed, the first-mentioned until 1 November 1927, but Arbitre had left in 1926. Two aircraft had participated in some fighting during the summer with Francis and a Chinese as pilots. Francis had, however, refused to drop the 30-lb bombs that the Aviation Bureau possessed.

[1] Liu P'ei-ch'üan was appointed director of CNAC about May 1932.

Personnel of the Yünnan Air Force lined up in front of two of their Potez 36s.

Yünnan at the end of March. They arrived there by rail on 1 April and were assembled by Fisher. The first flight was made on 8 April. There were now two separate flights at Wu Chia-pa aerodrome, one with two serviceable old aircraft and one with the six new Arrows. Squadron Leader Chang Chih-kao was also in charge of the reborn Aviation School, which now had some 70 students, including 16 women, under training. The Yünnan Aviation Bureau was now also known as the Air Service of the 10th Route Army.

Four Potez 36 two-seat cabin monoplanes arrived in July 1933 and were used as trainers. By October 1933 there were seven Chinese pilots, mechanics and instructors, who operated the flying school. Two classes of 50 each, about 25 pilots and 75 mechanics, had been graduated. The 25 pilots continued to take advanced flying instruction and there were about 40 new students.

During 1932-33 an American instructor was employed for five months. A British pilot, Captain Jones-Evans of the Far East Aviation Company, arrived at the beginning of April 1934 with an Avro 637 on a sales tour. In the same year Mao Kesheng of what was referred to as the Yünnan Aero Factory designed and built a light monoplane with a 100 hp 5-cylinder air-cooled engine, but nothing more is known about this aircraft. At the end of 1934 the Yünnan Aviation Bureau had two Breguet 14A2s, six Arrows, one Potez 32 transport and four Potez 36 trainers and Chang Yu-han was Commander of the air squadron.

In May 1935 the Aviation Bureau was reported to possess a "mangy lot of planes", including three Potez 36s, one Ryan, two Arrows, one "Breguet Cabin plane" (certainly the Potez 32) and the locally made low-wing monoplane. The Potez 36s were the only aircraft still airworthy. Chang Chih-kao, now Assistant Chief of the Aviation Bureau, had managed to get the locally built aircraft off the ground on two occasions. The French Government in Indochina had offered to sell four used Potez 25s but the negotiations had, at least for the time being, been suspended.

In March 1936 it was reported that the US Eastern Aviation Company had sold one "glassed-in" Stinson and one Fleet "scout" to the Yünnan provincial authorities. A general French survey of aircraft in China during the last quarter of 1936 credited Yünnan with two Breguet 14s and five Potez aircraft. By 21 April 1938 there were about ten machines of different types at Kunming aerodrome, some of which were termed as "private aircraft", in addition to those of the CAF Aviation School.

In July 1939 an American report mentioned that the Government of Yünnan had its own army and three aircraft, which had been serviced by the CAF Aviation School at Kunming. The few remaining machines must eventually have been absorbed by the CAF, but unfortunately it has not been possible to establish any details related to the final fate of the Yünnan Air Force and its aircraft.

Aircraft used by Yünnan

Type	Qty	Year	Remarks
French (80 hp rotary)	1	1922	
Breguet 14A2	8	1923	
Ansaldo SVA 9	1	1923	
Caudron G 3	6	1924	
Ryan Brougham	2	1929	
Potez 32	1	1930	
Arrow Sport	6	1932	
Potez 36	4	1933	
Mao monoplane	1	1934	Built locally (private?)
Stinson	1	1935/36	Not confirmed
Fleet scout	1	1935/36	Not confirmed

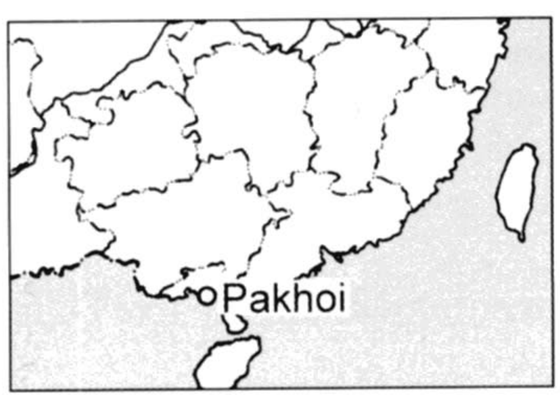
Other Local Air Activities

The **Wuhan** region consists of the three closely situated cities Wuchow, Hankow and Hanyang. The civil government of the Kuomintang moved there during the first part of 1927 and appointed T'ang Cheng-chih, warlord of Hunan, as Commander-in-Chief. The Wuhan Government was politically radical and soon there was a growing split between them and the centre and right sections of the KMT, who gathered around Chiang Kai-shek in Shanghai. On 6 April

Chang Tso-lin raided the Soviet embassy in Peking and six days later a massive purge of Communists and other radicals was launched in China. Chiang established a counter-government at Nanking and after being surrounded by Nanking troops T'ang finally resigned and left for Japan on 12 November.

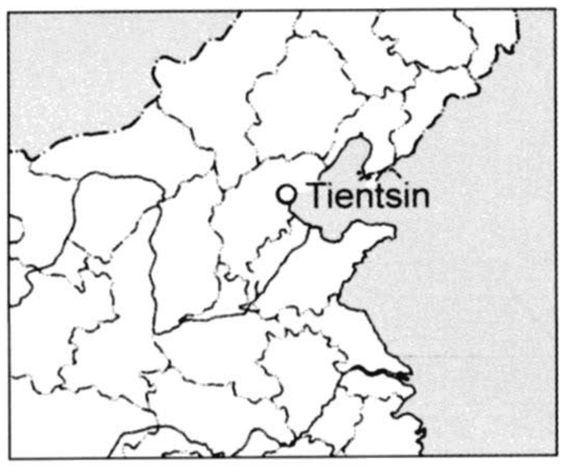
There are only a few reports on aviation at Wuhan. A factory for the repair and manufacture of aircraft was established at Nanhu, Wuchang, in 1927, but when the political tension grew, Chiang ordered the removal of the factory and the immediate departure of all aviation students from Wuhan. The cadets got away, but the aircraft were detained by the Wuhan military. On 3 March 1927 the Politburo in Moscow decided that all arms deliveries forthwith were to be arranged by the VOSTVAG organisation. A Wuhan Governments delegation was in Moscow in April-May to place new orders, but on 2 June the Russians decided to postpone all aircraft deliveries for the time being.

On 27 April 1927 all Russian advisers in China were ordered to go to Hankow immediately to serve that Government, but when the Wuhan Government decided to break with the Chinese Communist Party they left for home in July 1927.

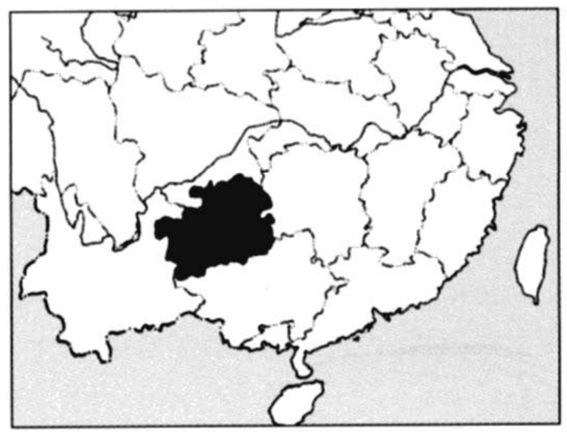


In 1928 General Chan Ming-shu was commander of the 11th Army at **Pakhoi** in the extreme west of Kwangtung province. Early in September that year ex-General Lo Kwan, who was working for General Chan, got in contact with the Far East Aviation Company to discuss the acquisition of aircraft.

Eventually Lo Kwan obtained two Breguets from a French firm instead and they arrived in Pakhoi via Yünnan on 2 November 1928. General Chan ordered that they be repaired and converted for civil use. Allegedly they were going to be used for a passenger and mail service between Hoihow and Pakhoi. An interview with Lo Kwan gave the impression, however, that the aircraft might be intended for the transport of opium from Yünnan. Early in March 1929 an experimental mail service was opened between Pakhoi and Hoihow and was run for six weeks. Nothing further is known about the final fate of these two aircraft.



In April 1928 an American intelligence officer reported that two matshed hangars had been erected by warlord Chu Yu-pu at **Tientsin**. There were two aircraft that belonged to him and his "air service" and were used as trainers. Unfortunately nothing more is known about this. Tientsin would have been under nominal control of Chang Tsung-ch'ang at Tsinan.



The province of **Kweichow** in southern China is situated inland and is not often mentioned in association with aviation. In November 1928 Ho Kwong, who had just been appointed advisor to the Governor of Kweichow, approached

The Kweichow Army Air Corps at Kweiyang acquired three Stinson Model O aircraft in 1934.

Vaughan Fowler of the Far East Aviation Company as the Governor wished to establish an aviation department at Kweiyang. In December 1928 a request was sent to Canton for help to organise an air force and the Canton Aviation Bureau sent out an officer. It seems, however, that nothing came out of this initiative.

In February 1933 General Wang Chia-lieh assumed governorship in Kweichow. A report dated March 1934 mentions the extreme poverty of the province. However, there were one or two aerodromes and from time to time the local Government had "secured one or two aeroplanes, mostly from some nearby general". The aircraft had crashed and no attempt had been made to repair them. There was no aviation bureau and no organised body of pilots or mechanics. In May 1933 "successful test flights" were said to have been made between Hunan and Kweichow on the initiative of General Wang Chia-lieh. The Governor promised to buy six British machines about October 1933, but these plans were delayed.

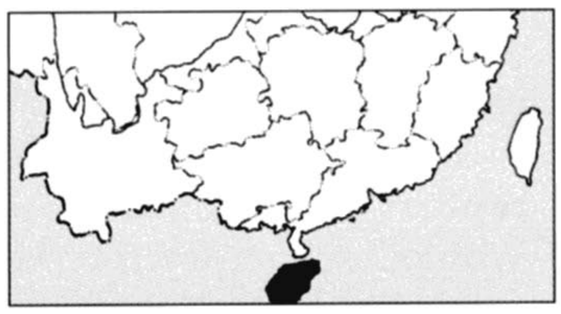
In May 1934 the newspapers reported that eight recently graduated flying officers of the Kweichow Army Air Corps were to leave Canton for Hong Kong to take delivery of three "Stinson fighters". The aircraft had just been assembled in Hong Kong and were to be flown to Kweiyang, Kweichow Province was developing an air force with officers supplied by the 1st Army Group aviation school (Canton Air Force) in Canton.

A Military Aviation School was to be formed at Kweiyang under Brig-General Chou Yi-ping (Chow Yat-ping), the Commandant of the Kweichow Army Air Corps and he was to fly to Canton on 25 May to hire instructors. He had ordered the three Stinson aircraft while visiting Canton and Hong Kong about six weeks earlier. General Wang Chia-lieh, whose position as Governor rested on the support of Kwangtung and Kwangsi, was said to be in need of an air force to suppress the "reactionary elements" in his province that were headed by General Yau Kuo-tsai.

The aircraft referred to were three Stinson Model O two-seat reconnaissance and bombing aircraft that eventually ended up in Canton. Although the British journal "Aeroplane" stated in December 1934 that a small air force had been formed at Kweiyang, it seems that this fledgling air force was in fact taken over by Canton soon after its formation. The article asserted that there was a small number of Fleet training machines at Kweiyang and that new aerodromes were being constructed.

The Central Nanking Government gained control over Kweichow in January 1935 and apparently captured a pair of light aircraft (Fleet trainers) at Kweiyang airfield, which allegedly had been acquired in 1932. The Nanking Government next turned its attention to Yünnan and sent troops to drive out the Communists as a prelude to assuming jurisdiction over that province. Kweiyang was menaced by imminent Red occupation for some time, however, until Kwangtung and Kwangsi troops arrived. These events precluded the formation of any new air force in Kweichow.

In May 1932 the head of the Canton Aviation Bureau, General Chang Wei-cheung (Wei-ch'ang), broke with Ch'en Chi-t'ang and left Canton with 90 dissatisfied Canton Air Force personnel to join former Cantonese Navy commander Admiral Chan Chat, who had rebelled against the Canton Government on 3 May. Both Chan Chat and Chang Wei-cheung were favourable to Nanking, which Ch'en Chi-t'ang was not.



Admiral Chan Chat went to the Chinese Navy's base on **Hainan Island**, situated to the south of Kwangtung mainland, and set up a separatist administration there. Refusing to take part in a planned attack on Hainan, the aviators instead moved to Kiungchow on Hainan to establish a rebel air force in support of Chan Chat. They allegedly brought two Ryan Broughams with them from Canton and started to purchase aircraft second-hand for the expected fighting against the Canton Government.

Chang had in fact ordered nine Fokker military aircraft via F Feld & Co on 26 March 1932, but these were destined never to be delivered. The rebel air force was reinforced by several aircraft delivered at Hong Kong on 31 May, however, which were immediately transported to Kiungchow. Early in June the total number of aircraft was reported to be ten.

In June the newspapers wrote about a "serious dispute" between the Canton Government and Chang Wei-cheung over the ownership of five aircraft that had arrived in Hong Kong from the USA. Chang had ordered the aircraft in July 1931 in his capacity as Commander of the Canton Air Force and now stated that he had ordered them for himself. The Canton Government was of course determined to take over them.

The type of aircraft is not mentioned, but the five Douglas O-2s delivered to Canton are obvious candidates, and Chang did in fact order them. It seems that they arrived in Hong Kong only in August, however. Chang Wei-cheung also bought eight second-hand Pitcairn PA Mailwing transport aircraft, allegedly in April 1932. The intention was to convert them into bombers. They are said to have arrived in Hong Kong in May 1932 (See above!). In any case the Pitcairn Mailwings finally ended up in the Canton Air Force. Aircraft of other types might have been acquired as well, the Arrow Sport, Curtiss Sport Travelair, etc, that were used by the Canton Air Force, but it has not been possible to confirm this.

One of the strangest aircraft sales in China is confirmed, however. The Far East Aviation Company, who represented de Havilland, managed to sell an old DH 9 bomber to Hainan, but the fate of this aircraft, which was apparently delivered, is not known.

On 17 June a fierce battle between the opposing forces broke out, but in July Chan Chak departed for Europe and his marines and warships evacuated Hainan and went to Amoy to merge with the 19th Route Army in Fukien. In November Chang Wei-cheung and the ex-Canton Air Force personnel followed suit and moved on to Changchow to join the Fukien rebellion.

Chinese Air Force Central Government, Nanking

The civil government of the Kuomintang (KMT) was established at Wuhan during the first part of 1927. This government was politically more radical than Chiang Kai-shek, who set up his military headquarters at Shanghai, where the KMT centre and right began to gather. The April 1927 offensive of the Ankuochün reached as far as Nanking, but in May Chiang's National Revolutionary Army (NRA, Kou-min ko-ming chün) struck back. Shantung warlord Chang Tsung-ch'ang, who led the Ankuochün forces, withdrew towards his home province. Meanwhile Wuhan Commander-in-Chief T'ang had attacked the Ankuochün in Hupei and forced them back on that front as well. Nanking was captured by the NRA on 24 March and on 18 April the National Government proclaimed Nanking the new capital of China.

At this moment Chiang launched a massive purge of communists and other suspected radicals and when the Wuhan Government appointed Hunan warlord T'ang Sheng-chih as their Commander-in-Chief, Chiang set up a counter-government at Nanking. Most of the Wuhan leaders went over to Nanking during the autumn of 1927 and after a sudden Nanking attack against his scattered forces, T'ang resigned and left for Japan on 12 November.

In February 1928 all KMT-affiliated armies were reorganised into four groups. The NRA under Chiang Kai-shek became the 1st Army Group, the KMC under Feng Yü-hsiang became the 2nd, the Shansi Army under Yen Hsi-Shan became the 3rd and the Kwangsi forces under Li Tsung-jen became the 4th Army Group. On 16 March 1928 a general offensive against the northern warlords was ordered and the war continued.

In April the 1st Army Group advanced into Shantung, while the 2nd Army Group attacked from Honan. The Ankuochün retreated, first into Shantung and then to the north, across the Yellow River. By 9 May Chang Tso-lin was pressed back and defending the railway lines approaching Peking. Peking was captured a few days after his assassination on 4 June and Nanyüan was taken by the 2nd Army Group on 6 June. Peking, or Pei-ching (Northern Capital), was renamed Peiping (Northern Peace) and the Chihli province was renamed Hopei[1].

In June Feng Yü-hsiang was recognised as Governor of Honan, but decided to change sides. A new Ankuochün offensive led to Chiang Kai-shek's resignation as Commander-in-Chief of the NRA on 12 August 1928. Sun Ch'uan-fang reached the vicinity of Nanking again, but on 31 August his army collapsed and 30,000 troops surrendered to the NRA. On 14 December the Ankuochün (Sun Ch'uan-fang and Chang Tsung-ch'ang) attacked again, supported by their air force, but they were soon driven back into Shantung. In the meantime Chang's son and successor Chang Hsüeh-liang, had decided to hoist the KMT national flag and on 30 December Nanking appointed him commander of the Northern Border Defence Army, which was the new name of the former Manchurian troops.

The Nanking Air Force

In April 1927 the NRA air force, which had been directed by a special aviation headquarters since February 1927, started to move to Nanking. A number of the R-1 (DH.9A) and Curtiss Jenny aircraft previously used at Canton were transferred. The aircraft captured from Sun Ch'uan-fang at Hungjao, Shanghai, were repainted with Nationalist national insignia and serial numbers and sent to Nanking by

1 Peiping was changed back to Peking in 1949. For the sake of simplicity Peking will be used throughout this book.

The Vought Corsair was one of the most common aircraft in the air force of the Central Government at Nanking.

The de Havilland DH 60 Moth was the first standard trainer of the Nanking flying school.

railway to be incorporated into the Nanking Air Force. Two Breguet 14A2s, five Caudron C 59s, a Morane-Saulnier AR 35EP2 and three Schreck FBA 17HMT2 amphibians were in flying condition and there was an additional dismantled and unserviceable aircraft of unknown type. The Nanking aerodrome, which was situated on Chungshan Road inside the city, a little less than one mile north of the south wall, had no workshops and matshed hangars provided the only protection available.

Aircraft were moved around depending on the war situation. On 4 July 1927 there were two Breguet 14A2s in Nanking, of which one had crashed. There were also a pair of Curtiss JN-4 Jennies. There were probably very few pilots, if any, and no flying had taken place during the last three weeks. Four aircraft had been transferred to Pukow, just north of Nanking.

These aircraft were used in the war along the Shanghai-Nanking railway and pilots Chang Wei and Shih Ma-yui were highly praised for their work in defence of the new capital after the battle of Luntang. Aircraft too part in the fighting against Chang Tsung-ch'ang along the Tientsin-Pukow railway in 1927 and the FBA amphibians were used in an expedition against T'ang Sheng-chih.

On 22 February 1928 an Aviation Bureau attached to the Military Council was formed. The old aviation school at Nanyüan, Peking, was formally dissolved in May 1928 and whatever was left of its equipment was later taken over by the Nanking Government.

German Advisers

After the fiasco with the Russian advisers in the mid-1920s, Chiang turned to Germany, where there were many unemployed officers looking for new jobs. Starting in November 1928 a large number of German military advisers were engaged. Chief Adviser Oberst Max Bauer, who arrived in November 1927, died in April 1929 and was succeeded in turn by Oberstleutnant Kriebel, General Wetzell, Generaloberst von Seeckt, and in 1935 General von Falkenhausen, who stayed until 1938. In 1929 a number of aviation advisers arrived: Fuchs (Chief aviation adviser), Boehler (chief mechanic, workshop adviser), Rubens (technical adviser), Techel (ground organisation adviser), Welkoborski (air transport adviser), Lehmann (flying instructor and adviser), Moltke (flying instructor) and Möllenhoff (flying instructor).

The advisers worked both in the German aviation mission and in the appropriate Chinese Air Force departments and they also lectured at the two existing flying schools. In addition to those mentioned above, Heinrich Hartmann was engaged as pilot between 1930 and 1934 and Alfred Streccius served as Adviser for Air Affairs during the period 1934 to July 1937.

There is considerable confusion about the exact names and functions of the directing offices of the Nanking Air Force and the terms aviation bureau, aviation department and aviation administration seem to have been used indiscriminately[2]. Reorganisations were made frequently and it is often not clear who is the real head of the air force. General Chang Ching-yü, who was Director of the NRA air force attached to Chiang Kai-shek's headquarters, later became Assistant Chief of the Aviation Bureau (Aviation Department) of the Ministry of War in Nanking, which was established on 11 November 1928. In January 1929 it was reorganised into the National Aviation Administration, which was independent directly under the National Government Council. The designation "Air Force" was formally adopted in April 1929. General Hsiung Pin was appointed Director of the Aviation Bureau/Aviation Administration in November 1928, but Chang Ching-yü remained in office, probably as Assistant Chief, until June 1929.

The presence of German advisers resulted in a number of orders for German aircraft. A Chinese Mission headed by German adviser Bauer visited European and American arms factories, including Junkers in Germany and the Junkers subsidiary AB Flygindustri in Sweden, in April-September 1928. In October-November orders were placed for Junkers K 53 bombing and observation aircraft and F 13 transports. At the same time 20 Focke-Wulf S 24 Kiebitz were ordered from Siemsen & Co and a contract was concluded for six Raab-Katzenstein (Raka) RK 2b Pelikans. Both these types were two-seat trainers.

In January 1929 an R-1, two Breguet 14A2s and two Caudron C.59s were based at Hungjao, Shanghai and a number of spare engines were stored there as well. The Ministry of War had established the Hungjao Aero Factory in August 1928 and an aircraft closely based on the Caudron

2 The corresponding Chinese terms are Hang k'ung ch'u, Hang k'ung chü, Hang k'ung pu, Hang k'ung shu, and sometimes Hang k'ung ssu.

"Hu-Jung No.1" was one of the first four Stinson SM-1 Detroiters that were acquired by the Nanking Government for airline service. They were later turned over to CNAC.

C.59 was completed there in January 1929. It was named "Cheng Kung" (Success) No.1 and it was flown for the first time by the director of the factory, Colonel Sun Te-shih. By April 1929 a second aircraft was reported to be under construction, but it is not known if it was ever completed.

War Emergency

Li Tsung-jen's Kwangsi forces, the 4th Army Group, invaded Changsha in January 1929 and Nanking sent troops towards Wuhan to counter this. The Navy's Second Squadron moved west along the Yangtze River and air stations were established at Kiukiang and Nanchang to support the Army operations. Wuhan was recovered on 5 January, but then Kwangsi sent an army to attack the Nanking-appointed governor of Hunan, Lu Ti-p'ing. War began in earnest on 26 March and at the end of the month Chiang Kai-shek ordered a general offensive, in which the Navy contributed an important part. The war ended on 20 April when the rebellious leaders agreed to leave China.

Aviation Exploration (Curtiss-Wright) had sent out two Curtiss Robin cabin monoplanes, an Ireland N-2 Amphibian and a Curtiss Falcon two-seat observation biplane for demonstrations and these aircraft arrived in Shanghai in March 1929. Due to the Kwangsi-Nanking war emergency the Nanking Government requested all four on 30 March and finally purchased them. At the same time the five Ryan B-1 Brougham cabin monoplanes owned by the Wuhan Commercial Aviation Company were commandeered and

Two examples of the Stinson SM-2 Junior used initially for airline service but later incorporated into the air force. This one is named "Kiukiang".

Nanking Air Force personnel, cirka 1931. The aircraft in the background are Douglas O2MCs.

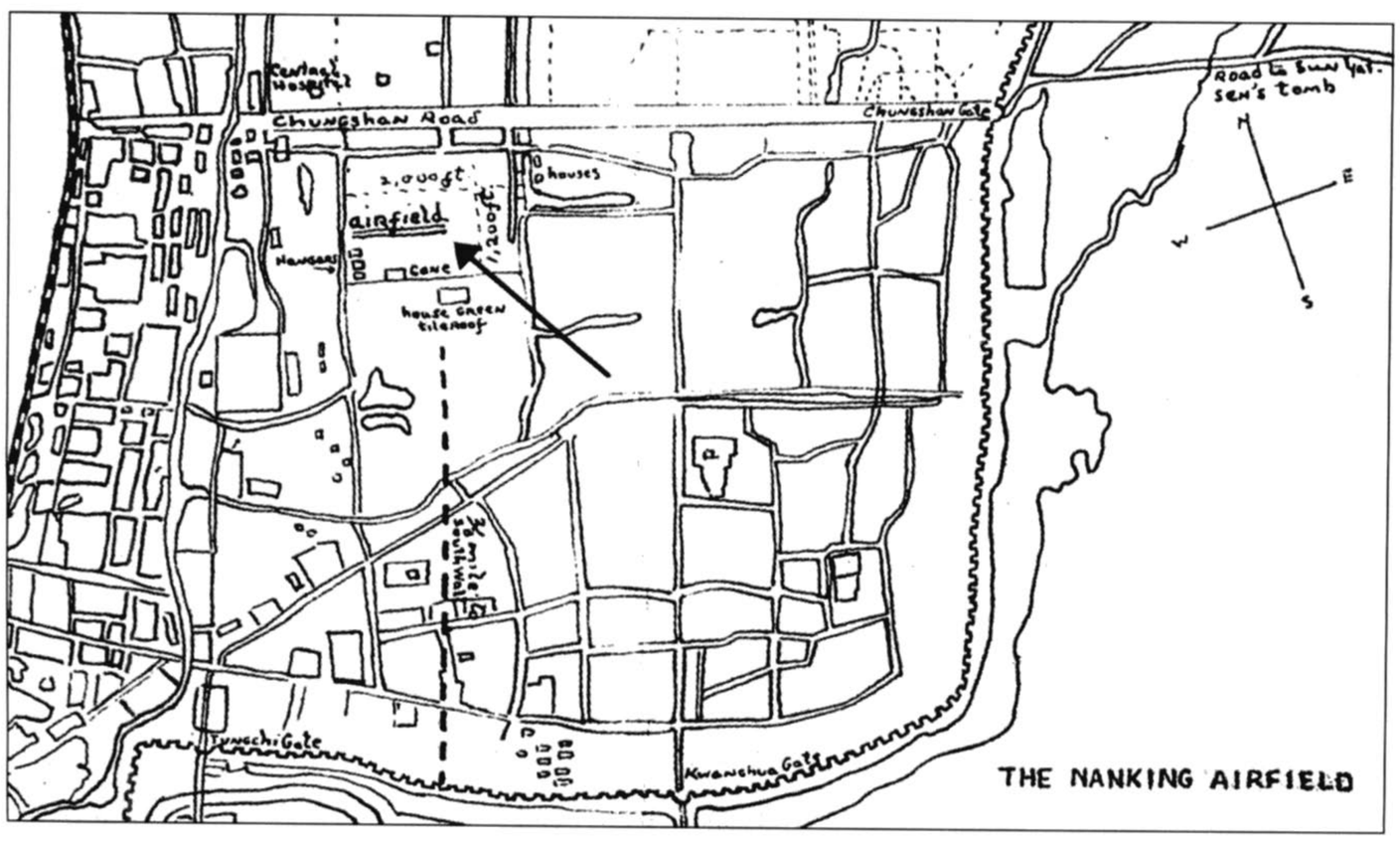
incorporated into the Nanking Air Force. When four de Havilland DH 60 Gipsy Moth two-seater trainers ordered by the same company arrived in May they were paid for and taken over as well[3].

The ex-Wuhan Ryans and Moths were allotted to the 1st Squadron of the Nanking Air Force, which was based at Hankow and twelve additional DH 60G Moths were purchased from Arnhold & Company and delivered to Nanking in June 1929[4]. The Moths supplemented and later replaced the German trainers.

From small beginnings the Nanking Air Force had now started to grow and in due time it would become the biggest in China. The 1st Squadron was commanded by Kao Tsai-t'ien and the 2nd by Chang Ou-yang. It was transferred to Changsha in April and the 3rd Squadron was sent to Hsüchow in May. By 16 September the 1st Squadron at Hankow had five Ryans, four Moths, one Curtiss Robin, one R-1, one Caudron and one Breguet. There were two hangars at the Hankow aerodrome and there was also a seaplane station at South Lake, Wuchang, 2.5 miles east of Hankow.

German Aircraft Arrive

The new German equipment started to arrive in April 1929. On 5 October 1928 the Nanking Commission to Europe had signed a contract in Berlin for three Junkers K 53 two-seat bombing and observation monoplanes, five spare engines and workshop equipment. On 17 November a second contract was signed with Siemsen & Co, which called for the delivery of six K 53s and two F 13 six-seat transports. All were to be fitted out as floatplanes, but a number of land under-



THE NANKING AIRFIELD

3 The Nanking Aviation Bureau was reported to have ordered four Moths that could be converted into seaplanes on 6 December 1928. These were probably those delivered to Loyang, Honan.

4 Another six Moths were purchased by the Mayor of Nanking in December 1929 and were due to arrive at the end of that month. Allegedly, they had originally been booked by Feng Yu-hsiang, but Nanking interceded and took over the order. These aircraft did not arrive until February 1930.

carriages were also ordered, as well as two Junkers-made hangars.

The Junkers K 53s were assembled by AB Flygindustri, the Junkers subsidiary in Sweden and as Norway was not a signatory of the Chinese arms embargo they could be shipped via Oslo in order to avoid problems. The ships then went to Hamburg to load the rest of the Junkers and Focke-Wulf aircraft before leaving for Shanghai, the "Deike Rickmers" on 8 February 1929 and the "Ilmar" on 26 March. On 16 April the "Deike Rickmers" offloaded nine Focke-Wulf Kiebitz, six Raka Pelikans, six Junkers K 53s and a Junkers F 13 in Shanghai. Eleven Focke-Wulfs, three K 53s and one F 13s arrived on the "Ilmar".

The Junkers K 53s were assembled and delivered at Lunghua by Junkers company pilot Fritz Horn and four of them were mounted on floats and received by the aviation station upriver from Kiangnan, Shanghai. On 25 April one hit the mast of a boat and crashed into the Whangpoo River on its first test flight with a Chinese pilot at the controls. A Chinese fitter was drowned in the accident and the aircraft was lost. On 21 May a second K 53 floatplane crashed near Nanking. It suffered a structural failure in the air and caught fire after the crash. The pilot, Captain Keng Yü-tseng, and mechanic Tu Wen-ching died.

It was soon discovered that the cause of the second accident was that the factory had connected the dual controls in the rear cockpit incorrectly and Junkers decided to pay damages and deliver a free replacement K 53 as compensation. The whole affair was a scandal and a great embarrassment for the German advisers and there was a new crisis when the Chinese discovered that one of the K 53s was a used machine, which had been overhauled and delivered as "new". Siemsen & Co had offered to deliver six Junkers W 33s fitted out as bombers and three to six of the new K 47 fighter, but the outcome of the previous orders reduced interest in German aircraft.

The Focke-Wulf Kiebitz trainers were handed over in Shanghai by Junkers pilot Fritz Loose and transferred to the new flying school in Nanking, which had opened on 28 February. Students had been recruited already in November 1928 and overseas Chinese in San Francisco had donated money for the purchases of at least three aircraft. However, the Focke-Wulf trainers were not much liked and by November only 14 had been erected and one had crashed.

State-Owned Airline

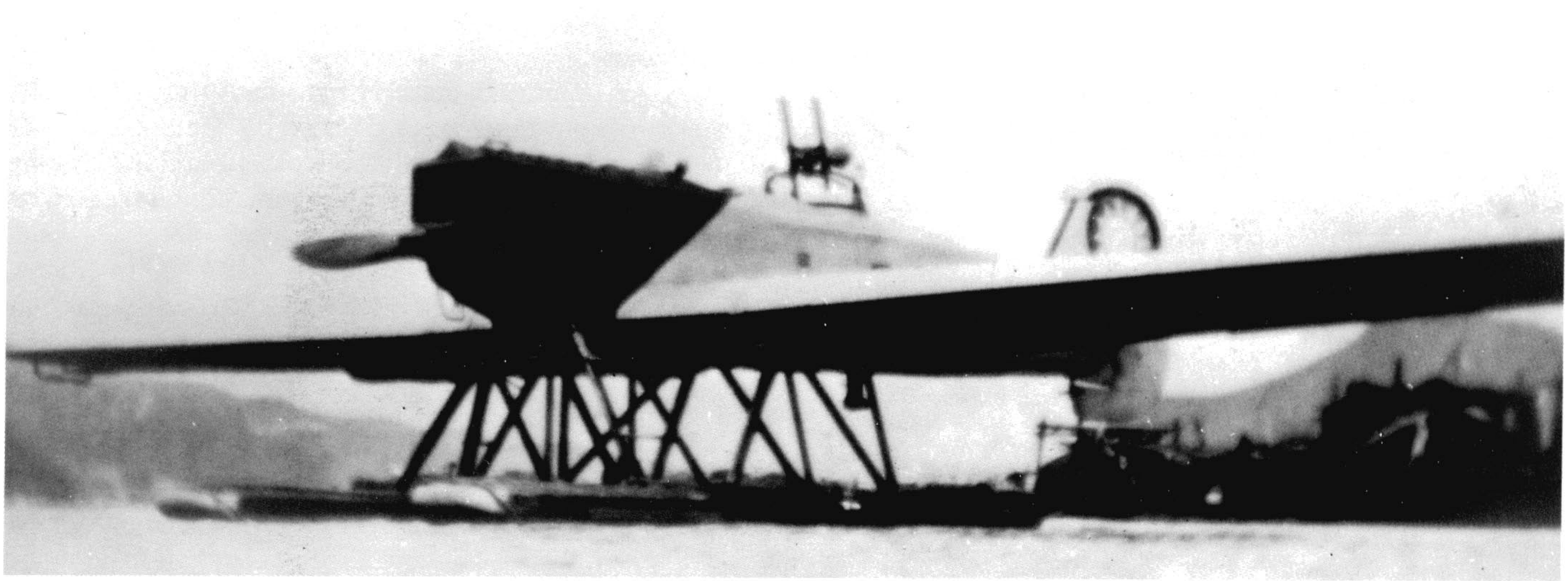
In January 1929 Wang Peh-ch'ün, Minister of Communications, decided to organise an airline for operations along the Yangtsekiang from Shanghai over Nanking to Chengtu in Szechwan. Li Hing-tsung was head of the Ministry of Communications' Aviation Office since late 1928 and Nieh Kai-i was appointed Director of the airline and ordered four Stinson SM-1F Detroiter five-seat cabin monoplanes through the American consul in Nanking on 17 March 1929.

Wang signed an agreement with the Stinson Company for the operation of mail services[5] and on 18 May the so-called Shanghai-Chengtu Aviation Joint Governmental Bureau (Hu-Jung hang-k'ung hsien kuan-li ch'u) was set up. The four Stinson Detroiters arrived in Shanghai on 22 May together with mechanic Arnold Weier and pilots W R Henderson and J B Machle. The aircraft were assembled at Hungjao and were marked with military national insignia and fleet numbers: "Hu-Jung No.1" (short for Shanghai-Chengtu), "Hu-Jung No.2", etc.

Henderson prepared to test fly the assembled aircraft on 13 June, but due a dispute over working conditions he was instead dismissed! Machle and Weier signed six-month contracts, however, and Henderson was later reengaged as well, but just from month to month. The four Stinsons were tested and on 8 July Henderson, Machle and Nieh made an inaugural flight between Shanghai and Nanking in "Hu-Jung No.1". "Hu-Jung No.2" suffered an accident on 18 July but could be repaired. Only mail was accepted initially, but from 26 August passengers were carried as well.

In October the service was extended to Hankow and the

5 This agreement clearly violated a contract concluded with the Aviation Exploration (Curtiss) by the Ministry of Railways less than one month earlier.



Junkers K 53 floatplane of the Nanking Air Force. Ten of these aircraft were acquired.

This BFW M 18d was used for aerial survey and was named "Tse Liang 1". The aircraft inside the workshop in the background is a Junkers K 53.

final sector to Chengtu was to have been opened on 1 December. This was postponed, however. By 22 December a total of 144 round trips between Shanghai and Nanking had been made since the inauguration on 8 July. Henderson and Machle had trained five Chinese pilots, Chang Hwa-yi, Chang Shu-shen, Chen Pu-chow, Chow Hwang and Kuo Lin, and Arnold Weier had instructed a number of mechanics. Henderson left in December, but Machle continued as instructor.

Four new Stinsons had been ordered in October and they were shipped on 2 November on board SS "President Jefferson" with an amount of spare parts and two sets of floats (for use on the Kiukiang-Hankow sector). Two of these aircraft were SM-1 Detroiters and two were smaller four-seat SM-2 Juniors.

At the beginning of October two Detroiters had been turned over to the Air Force temporarily to help suppressing a local uprising near Nanking and the military were eager to take over all available aircraft. Early in 1930 the Ministry of Communications sold the four machines first acquired to the Ministry of War, but T V Soong made them turn over the four that arrived in Shanghai in February 1930 instead. By April 1930 the Ministry of Communications had one American (Machle) and two Chinese pilots and four Stinson Detroiters at their disposition. In the end all six Detroiters were turned over to CNAC after the reorganisation of that company and only the Juniors were kept by the Air Force.

Reorganisation

Chiang Kai-shek was appointed Chairman of the National Government on 10 October 1929 and late in 1929 the National Military Council was reorganised into the General Staff, the Ministry of War and the Ministry of Training.

General Hsiung Pin was replaced by Chang Huei-ch'ang as Commander-in-Chief of the Chinese Air Force (CAF), or Chief of the Aviation Department (Hang K'ung-shu), in June 1929. Hsiung Pin was connected with Feng Yü-hsiang in Honan and resigned when Feng defected in May 1929. Chang Huei-ch'ang was formally appointed on 12 September. There was a complete reorganisation of the Aviation Department, which then comprised a General Affairs Department, the 1st Department (Military Affairs, Education and Publication Divisions), the 2nd Department (Aerial Navigation and Mechanical Divisions) and a Committee of Experts. A two-year program designed to reorganise and expand the CAF was announced on 24 August 1929 and 62 new aircraft were to be acquired immediately.

On 20 November a Junkers F 13 floatplane piloted by General Chang Huei-ch'ang and with German adviser Fuchs as passenger had an accident in Nanking. Chang made a hard landing, the floats were torn off and the aircraft sank. The crew was rescued, however.

On 29 September the Nanking Government instructed all aviation units in China, including the Manchurian Air Force, the "South China Air Squadron" at Canton, the Yünnan Air Fleet, the North-Western Air Force at Sian, the Shansi Aviation School and the Szechwan "Commercial Aviation Administration", to serve under the Aviation Department of the Ministry of War. This had little practical effect, however, and these more or less independent organisations continued to function as before with little or no control from Nanking.

Nanking Air Force, Summer 1929

- 1st Squadron: R-1 (DH.9A), Breguet 14 and Caudron C 59
- 2nd Squadron: Breguet 14 and Ryan Brougham
-3rd Squadron: Junkers K 53 and F 13, 2 DH 60 Moth, 1 BFW U 12 Flamingo
- Amphibian Squadron: Junkers K 53

Later the 4th Squadron was formed and the Amphibian Squadron became the 5th Squadron. The 6th Squadron was formed in 1930.

Six Potez aircraft, four Potez 25 reconnaissance and bombing biplanes and two Potez 33 bomber-transports, which had been ordered in 1928, arrived in the summer of 1929. In October the same year a Curtiss Fledgling two-seat trainer and a Curtiss Robin B cabin monoplane were purchased by the Chinese Patriotic League of Ontario, Canada, for the Nanking Government and both were shipped to China on 19 November. Another Fledgling was registered to the Chinese Patriotic Flying Corps of Boston, Massachusetts and it was reported that a contract for 30 Robins had been signed, but this has not been confirmed. Apparently four Fledglings were shipped from the USA to Shanghai on 1 October[6].

The Nanking Government asked for price quotations for Vought Corsair bombing and observation biplanes in September 1929 and twelve were then ordered from Vought representative Earl F Baskey of L E Gale & Co in October. They were shipped in November-December the same year together with machine-guns (12 fixed Colt and 12 flexible Lewis), bomb racks, 500,000 rounds of 30-cal ammunition, and 80 bombs of various sizes, to be copied by Chinese arsenals. The first Corsair arrived in Shanghai in mid-December and the last six on 20 January 1930. A second batch of twenty Vought Corsairs was ordered in April 1930. These aircraft arrived, were set up and handed over in September 1930.

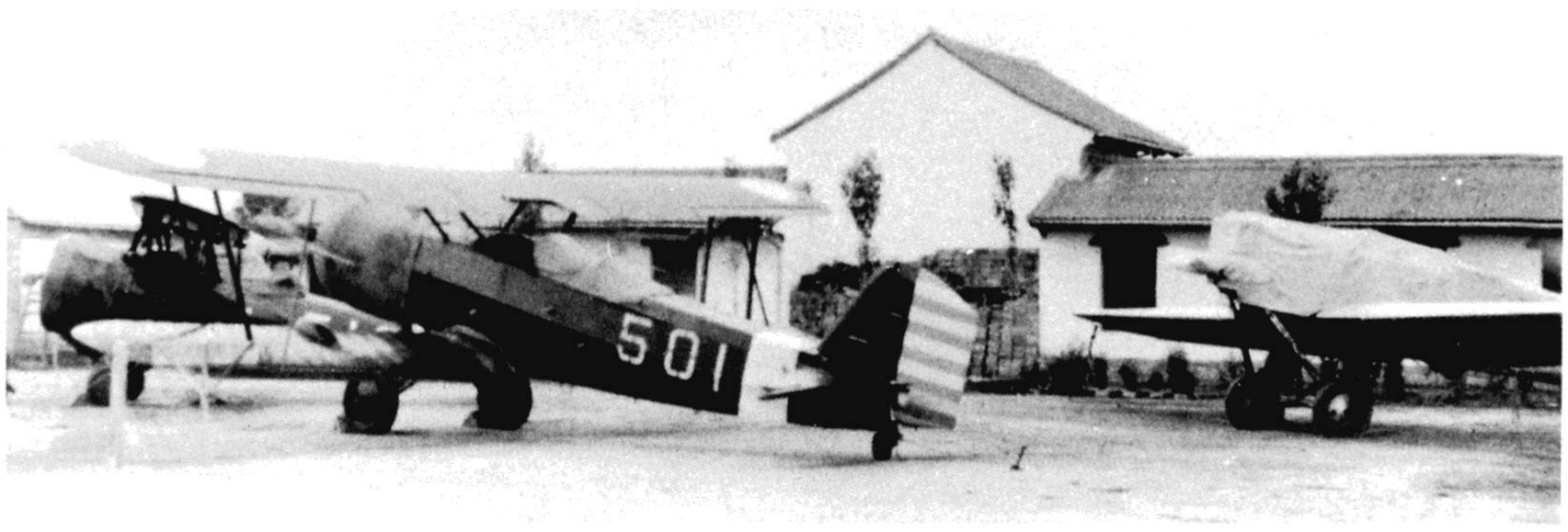
American Advisers and Aircraft

Floyd N Shumaker was engaged as aviation adviser by the Nanking Government in May 1930. He was also an agent for Douglas and had just concluded a contract for ten two-seat Douglas O-2MC bombing and observation biplanes, which arrived in Shanghai in June 1930. Another American, Bert Hall, who had come to China in May 1929, was engaged as adviser as well and two recent graduates of Kelly Field were brought out to China, one as flying instructor and the other as an engineering officer. Shumaker and Hall intended to reorganise the Nanking Air Force, but by May 1930 they were personally directing operations against Honan and Shansi on the Hankow front and from Hsüchow, respectively[7].

Hankow Aerodrome 1930

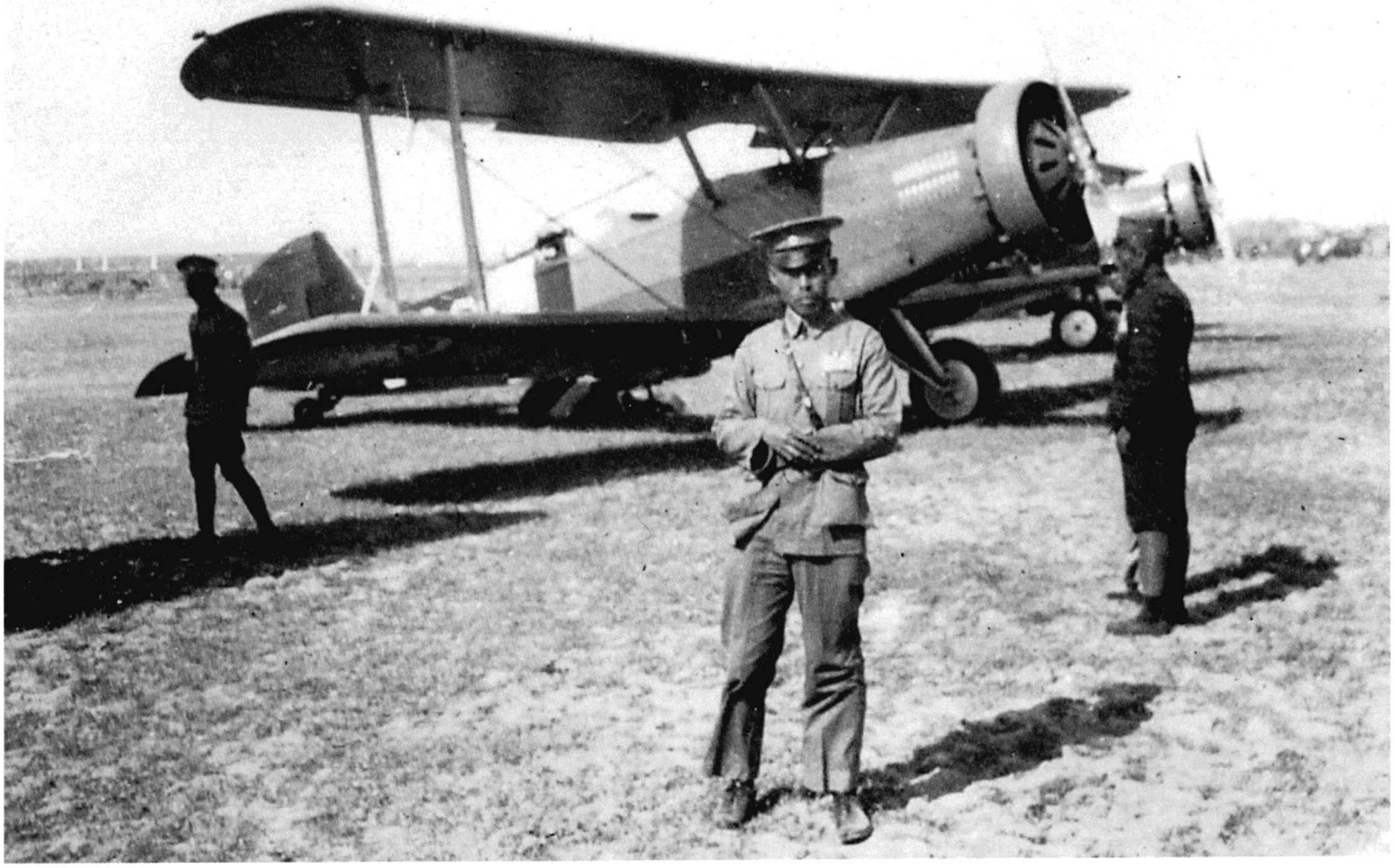
At an unspecified date in 1930 the following aircraft were seen at the Hankow aerodrome:
One Breguet 14A2, one Potez 25 (unserviceable), one Potez 33 (under repair), one Junkers F 13, three Junkers K 53s, six Raka Pelikans and three Focke-Wulf Kiebitz.

By February 1930 the aviation school was about to move from the aerodrome inside Nanking to a new aerodrome under construction 2 miles outside the city. Training had just been restored after one of several interruptions due to war emergencies, when instructors and aircraft were sent to the front. Eighty pupils were under instruction and Bert Hall and two or three German advisors were present. Fifteen Gipsy Moths had replaced the Focke-Wulf Kiebitz and Raka Pelikan trainers used in 1929[8]. In addition to the Moths there was one BFW U 12 Flamingo, a Raka Pelikan, a Focke-Wulf Kiebitz, a Junkers K 53 and an R-1 fuselage. Most of the German trainers had been sent to the Hankow and Lunghai fronts when the Moths arrived and



Vought Corsair, Douglas O2MC s/n 501 and a Junkers W 33.

6 There is a photo of a Robin B, a Robin C and a Fledgling being "donated by Chinese-Canadians", probably taken in Canada. In 1931 there was one "Curtiss trainer" at the Nanking flying school, which had been presented by Chinese in Malaya.
7 Shumaker represented Douglas through the China Aviation Equipment Company (sometimes the Aviation Corporation of America). He left in September 1930. Before this he tried in vain to buy the Douglas O-2MC that had defected from Nanking to Shansi with the intention to use it as a demonstration aircraft at Mukden. Weston "Bert" (or Burt) Hall was a former member of the "Lafayette" squadron during WW I. He was dismissed in September 1930 and was later involved in some dubious aircraft deals with Canton. In November 1933 he was sentenced to two years and six months imprisonment by the US Court in China for swindling a Northern Chinese militarist, this time not in the sphere of aeronautics, however.
8 According to the British report referred to, a further five Moths were "not yet in Nanking". Other intelligence reports mention that the Nanking school had 12 Moths in April 1930.



Douglas O2MC. The Nanking Air Force acquired many of this type in different versions.

in April 1930 a reconnaissance squadron led by Mao Pang-ch'u was set up with six Moths. It did not return until in October. The school's first class graduated in December 1930.

Campaigns Against Honan and Shansi

On 25 April 1929 Feng Yü-hsiang in Honan rebelled against the Nanking Government and fighting soon broke out. By the summer of 1930 the Nanking Air Force was concentrated at Liu Ho, near Kweiteh in eastern Honan, where Chiang Kai-shek had set up his headquarters and the Honan Army headquarters at Kaifeng were bombed. At one instance the Honan Air Force's only Junkers W 33 flew over Kweiteh, where the Corsairs of the 2nd Nanking Air Force Squadron were stationed. It was attacked by a Corsair flown by Chuang Li-hua (a pilot of the 6th Squadron), and force landed. Honan troops found the downed aircraft, however, and managed to dismantle it and take it back to Loyang. In May 1930 a Nanking Air Force Junkers of the 2nd Squadron had been mistaken for Feng's aircraft and had been forced down by a Corsair of the 4th Squadron!

One Nanking Corsair made a forced landing and fell into the hands of "bandits" in May. Feng Yü-hsiang managed to seize it before the Nanking Government could produce the ransom demanded. Another Nanking machine was shot down.

The fighting ended in October 1930 after Kaifeng had been taken on 3 October and Loyang on the 9th. Feng Yü-hsiang went into exile and his army was incorporated into the Nanking army. The aircraft belonging to the Honan Air Force, the Junkers W 33 and four DH 60 Moths, were taken over by the Nanking Air Force. Feng had originally ordered three W 33s and they had been shipped from Germany in February and March 1929 but because of the hostilities only one machine reached Honan and the other two were transhipped to Manila and stored there.

In February 1930 Shansi warlord Yen Hsi-shan joined Feng Yü-hsiang's anti-Chiang Kai-shek movement and invaded Shantung. In April 1930 he rebelled openly against Nanking. On 30 May two German advisers, Otfried Lehmann and Fritz Möllenhoff, arrived at Tsinan, Shantung, to participate in CAF operations against Yen flying a Junkers F13. Six Junkers K 53s had been stationed at Tsinan, but these were apparently withdrawn when the Shansi troops arrived. Kaifeng, Chengchow and Tsinan were later bombed by Nanking Air Force Junkers K 53s, Douglas O-2MCs and Vought Corsairs stationed at Kweiteh.

In July Chiang launched offensives into Shantung and Honan. Two Nanking aircraft flew over Tientsin on 27 August 1930 and machine-gunned the railway station. The following day 6-7 bombs were dropped on Peking by three aircraft. By October the Shansi troops were forced to withdraw back into their home province again and in No-

Aircraft sent to Nanking for demonstrations and evaluation in 1930-31

Type	Identity	Fate
Arado SC II		Unknown
Ford Tri-motor	NC-406H/5-AT-65	To Mukden
Avro Avian	VR-HAD/465	Unknown
Avro 621	464	Back to FEACo
Blackburn Lincock III		Purchased
Junkers A 50	3531	Presented in 1934
Westland Wapiti IV	VR-HAC/WA2150	Sold to Kwangsi
BFW M 23b		Unknown
Vickers Vespa VI	G-ABIL/1	Returned to the manufacturer
Heinkel HD 61a	322	Crashed
Klemm L 26 IIa		Unknown
Junkers K 47		Purchased
Fleet Model 2	NC706V	Sold to Canton
Fairey Gordon	F.1515	Crashed
Boeing 100D	NC873H/1144	Crashed, returned to manufacturer
Boeing 218	X66W/1260	Purchased

vember 1930 Yen resigned after Taiyüan had been bombed on 9 November. The aircraft found by Nanking troops at Taiyüan, six DH 60 Moths, a BFW U 12 Flamingo, possibly a BFW M 23 and one or two older machines, were taken over by the Nanking Government. In addition Shansi had captured two Nanking aircraft, a Corsair and a Douglas O-2MC, during the war. The Douglas was turned over to Yen Hsi-shan by a defecting Nanking pilot and the Corsair was for some reason turned given to Manchuria and took off from Peking for Mukden on 18 March 1931.

Corsair, Douglas, Junkers and a few Potez and Breguet aircraft had been used in the 1930 operations. About 20 of the 32 Corsairs were reported to have survived and six or eight of the ten Douglas O-2MCs remained.

General Mao Pang-chu (Pang-tsu)[10] was acting commander of the Nanking Air Force late in 1930, but Chang Huei-ch'ang remained Director of the Aviation Bu-

10 Mao was vice-commander of the Nanking Air Force until being appointed Head of the Nanking Aviation School in 1931 and replaced by by Zao Pao-tsing. He later held other leading posts in the CAF headquarters.

Blackburn Lincock flighter s/n 610 with Douglas O2MC s/n 607 in the background.

reau. In February 1931 it was announced that the Aviation Department (Bureau) of the Ministry of War was to be reorganised and expanded on 15 March 1931 into the National Aviation Administration, which was to be independent of the Ministry of War.

On 20 March 1931, 83 student aviators graduated from the Nanking Aviation School. The training took a steady toll of aircraft and personnel, however. In an accident on 17 April 1931 an instructor was killed and in May the same year a Douglas and a Raka Pelikan collided in mid-air. The Head of the Nanking Aviation School, Ying Ze, was replaced in 1931 by Mao Pang-chu, former Vice-Commander of the Air Force.

Cantonese Defection

A National Aviation Conference was convened in Nanking and was inaugurated on 20 April 1931. The intention was to amalgamate the two separate air forces at Canton and Nanking into one national service. More than 70 delegates attended. However, when the conference closed on 25 April no positive results had been achieved. On 28 April the Canton delegates and many of the Cantonese pilots in the Nanking Air Force hurriedly left the city and returned to Canton. Several pilots defected with their Douglas and Corsair aircraft and some aircraft were sabotaged[11]. Chang Hueich'ang abandoned his post in Nanking and left with the others. He was temporarily replaced by General Chu P'eite, Chiang's former Chief of Staff, as Head of the Aviation Bureau, but Chu was in turn replaced by General Huang Ping-heng, former Assistant Chief of the Aviation Bureau, in June 1931.

During the last two days of the conference a big air show had been staged in Nanking. All foreign aircraft representatives had been invited to participate and a number of British, German and American aircraft were demonstrated; the Avro Avian and Avro 621 Trainer, Blackburn Lincock, Fairey IIIF, Westland Wapiti IV, Vickers Vespa VI, Heinkel HD 61a[12], Klemm L 26 IIa, Junkers K 47 and Fleet Model 2. The demonstrations with some of these aircraft continued for several months.

Miss Wang Kwei-fen, referred to as "the first Chinese aviatrix", returned to China in July 1931 after having graduated from New York University aviation school. She was given a post in the Aviation Department.

One report credited the Nanking Air Force with about 25 DH 60 Moths, 20 Focke-Wulf Kiebitz, six Raka Pelikans, eight Corsairs, ten Douglas O-2MCs, six Junkers K 53s and one F 13 at the beginning of July. Due to the conflict with Canton the Nanking Government was very anxious to buy new aircraft. Twenty Douglas O-2MC2s had been ordered by a purchasing mission under Chang Huei-ch'ang[13], which had been sent out to the USA on 2 February 1931, but these aircraft were not to arrive until later. Three Blackburn Lincock single-seat fighter biplanes were delivered by Arnhold & Company about June. One was a demonstration machine and the other two had been purchased by Hunan Province (Ho Chien), but had been taken over by the Nanking Government.

The demonstration example of the Junkers K 47 two-seat fighter monoplane was purchased and six more were ordered from Junkers representative Stertz. Junkers company pilot Johann Risztics was engaged by the Aviation Bureau for conversion training of a number of Chinese pilots. He was fired after only 10 days, however, when the K 47 crashed on or about 1 July with a Chinese pilot at the controls and Risztics in the back seat. The accident was caused by an engine failure. The engine was torn off on impact, but nobody was hurt and German mechanic instructor Boehler later repaired this machine.

The six new Junkers K 47s were shipped on 4 June from Limhamn in Sweden, where they had been assembled, and arrived in Shanghai on 17 July. The first one assembled was test flown in Shanghai on 3 August. To their anger Nanking found out that in the meantime the Canton Government had ordered a batch of three K 47s from Siemsen & Company and they immediately tried to take over that order as well! These aircraft were shipped from Hamburg on SS "R C Rickmers" on 4 July. When they arrived at Wusong on 22 August they were confiscated by Shanghai customs together with an amount of ammunition and 600 machine guns. The Nanking Government paid for the aircraft and Siemsen was happy to deliver to them instead of to the original buyers at Canton!

Anti-Communist Campaigns

During the period 1930-34 the Nanking Government launched five campaigns of "encirclement and annihilation" against the Chinese Communist Army and the Communist (Soviet) Government in central Kiangsi. The first campaign took place between December 1930 and January 1931 and ended in defeat for Nanking. In December 1930 Nanking air units (1st, 3rd and 5th Squadrons) were stationed in Hankow, Nanchang and Changsha to support the Army. The second campaign of May 1931, which was directed from Nanchang and in which three squadrons took part, ended in the same manner. Chiang Kai-shek then took personal command at Nanchang and launched a third campaign in August 1931, which ground to a halt after the Japanese attack on Manchuria in September. The 1st Squadron was then stationed at Nanchang, the 3rd at Chanshu and the 5th at Chian.

General Ho Ying-ching was appointed Head of Nanking air operations for the duration of the military campaign in Kiangsi. The Air Force organisation now consisted of the 1st to 19th Squadron and two special Hunan squadrons, set up and paid for by Hunan General Ho Chien. Each

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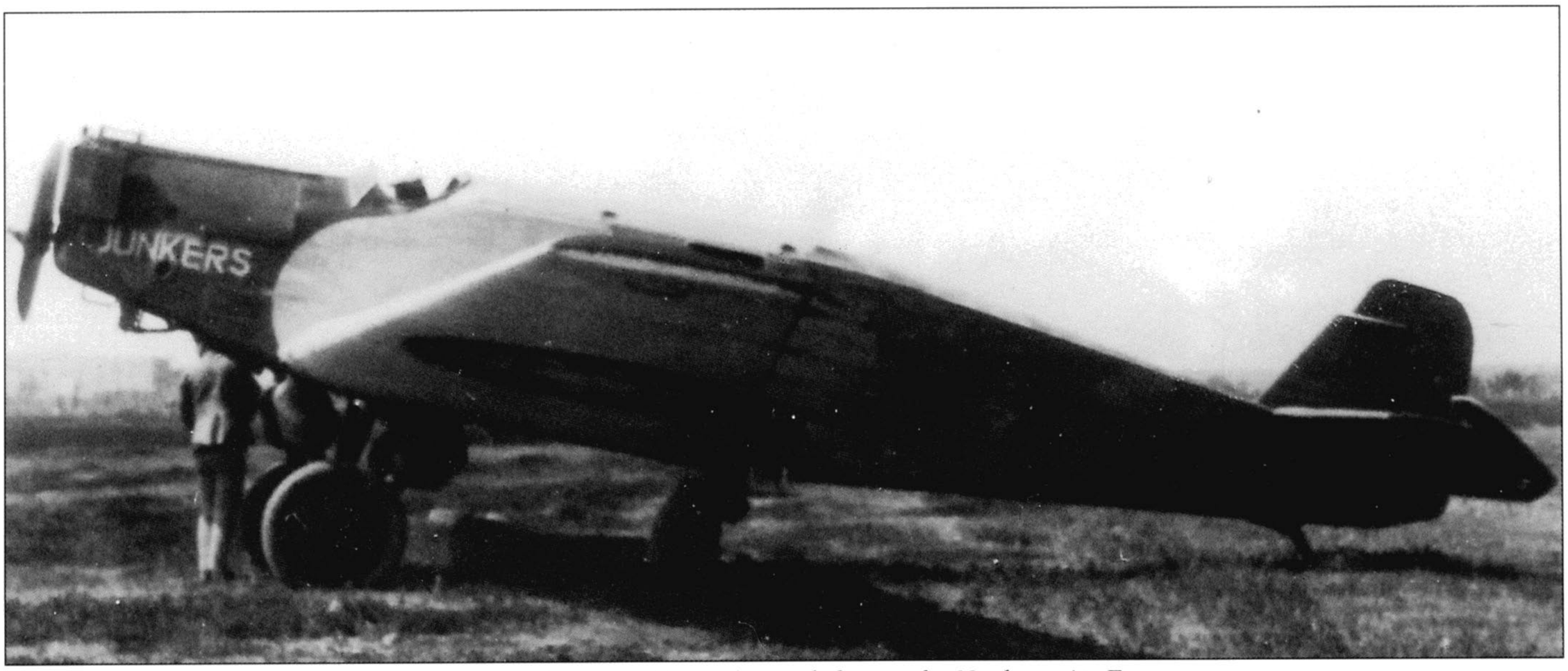
11 It has not been possible to establish how many aircraft that defected from Nanking to Canton, but it seems that at least one Douglas and four Corsairs were involved.

12 German pilot von Oertzen crashed with the Heinkel at Nanking on 22 August. The aircraft, which apparently had arrived in Nanking only three days earlier, was completely destroyed, but the pilot survived the accident.

13 The other members of the mission were General Huang Ping-hang, Vice Director of the Aviation Bureau, Major Wu Chia-shi and Captain Chang Chao-chiang.



Three Junkers W 33 armed transports were purchased by Honan but ended up in the Nanking Air Force.

squadron had, at least theoretically, five aircraft. After the defection of several pilots with their aircraft to Canton in April 1931, 18 of the 19 squadrons were united two and two into nine groups: 1st Group (Commander: Yen), 2nd (Tsang), 3rd (Liu), 4th (Yang), 5th (Tien), 6th (Wang), 7th (Tsang), 8th and 9th. The 3rd Squadron was transferred from Nanking to Nanchang in mid-June and the 4th Squadron moved from Nanking at the end of April. During the first part of July the 2nd Squadron moved from Nanchang to Nancheng, the 3rd moved to Kianfu and the 5th moved to Nanchang.

At the end of July the CAF Order of Battle was as follows:

1st, 2nd and 3rd Squadrons, Aviation School, Nanking (Commanded by Huang Ping-heng)

4th, 5th and 6th Squadrons, 1st and 2nd Special Squadrons (Hunan), Changsha (Ho Chien)

7th, 8th, 11th, 12th, 13th, 14th and 15th Squadrons, Kiangsi (Ho Ying-ching)

9th and 10th Squadrons, Hankow (Ho Chen-chung)

Seven Junkers K 47 two-seat fighters were supplemented by three more ordered by the Canton Government andtaken over by Nanking.

16th and 17th Squadrons, Suchow (Mah Hung-kwei)
18th and 19th Squadrons, Wuhan (Ho Chen-cheng)

The 1st and 7th Aviation Squadrons returned about 9 August to Chengchow from Changte in northern Honan, where they had been engaged against warlord Shih Yu-san. Later in August the 1st Squadron moved to Nanking and prepared to proceed to Kiangsi for "anti-bandit suppression" - the third anti-Communist campaign.

The twenty Douglas O-2MC2s arrived in Shanghai in August and September and were accepted immediately by the Aviation Bureau. On 22 August 1931 Risztics crashed with one of the new Junkers K 47s, which had arrived in Nanking two days earlier, and wrecked it beyond repair. A pursuit squadron was in the process of being formed, but the Chinese pilots now refused to fly the Junkers fighter as they considered it unsafe.

After visiting Hungjao aerodrome, Shanghai, on 3 September, the American Military Attaché could report that seven new Junkers K 47s were assembled and ready, but the Chinese pilots would not fly them. Several new Douglas machines were ready as well. All 20 O-2MC2s had arrived and were fitted with bomb racks. There were also some "Curtiss and Fokker" aircraft. A Colonel Chen was in command of the aerodrome. Four aircraft had been sent via Suiyuan to Kansu to aid the governor, General Chin Shu-jen, in the suppression of "bandits" and on 4 September Nanking ordered four squadrons to Hunan to counter invasion threats by Canton troops. Two were to be stationed at Chuchow and two at Changsha.

United Aircraft Company representative Major McConnel arrived in China with company pilot Julius Barr and a Boeing 100D single-seat fighter that had been sent out for demonstrations. It was shown to T V Soong at the end of September. Four of the Junkers K 47s piloted by three Chinese and one German were in the air at the same time. Barr then set out for Peking to continue the demonstration tour there, but crashed on the way near Tsinan. The Boeing fighter was sent home to the factory for repairs and was replaced by a Boeing 218, which arrived in Shanghai in December. In October the last of the Junkers and Douglas aircraft were transferred to Nanking. One of the Douglas O-2MC2s had crashed during test flights.

German, American and British Aircraft

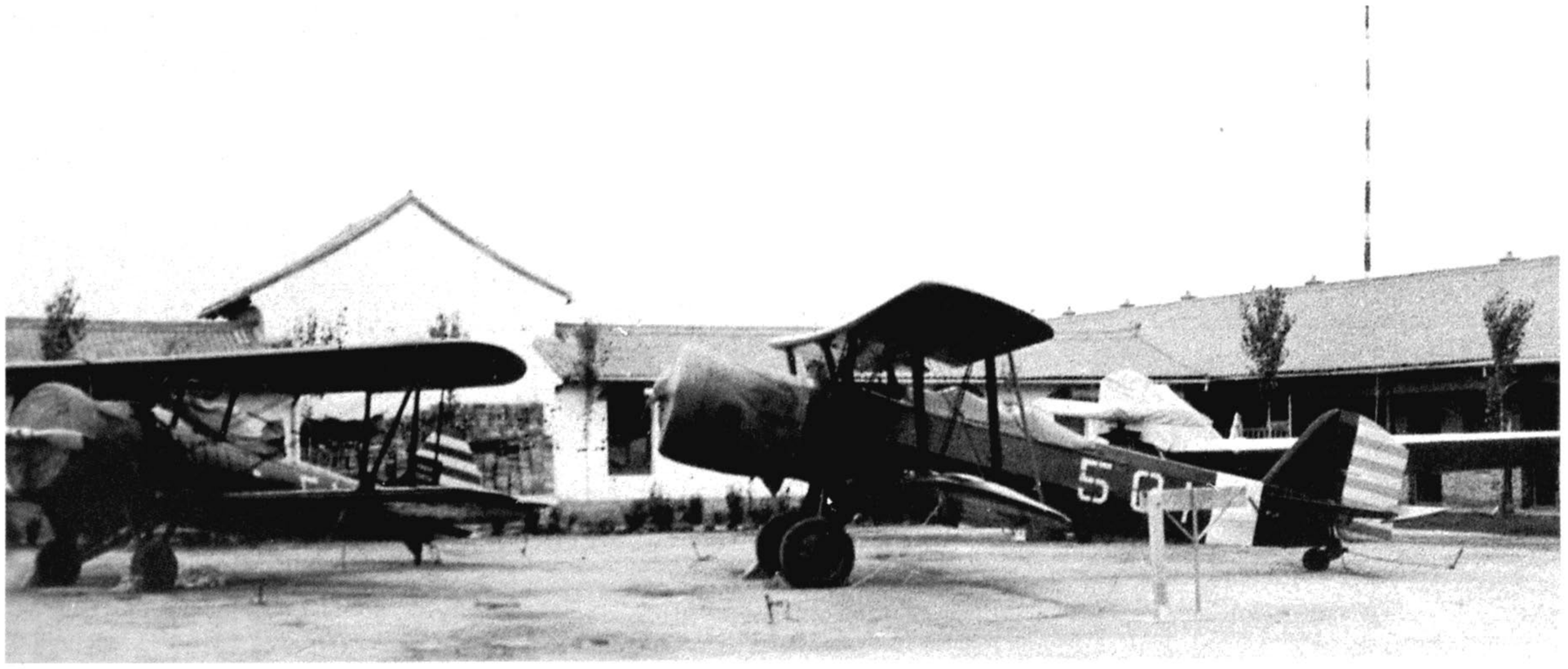
A Junkers F 13 floatplane was purchased by the Chinese Government and the delivery flight from Berlin to Nanking was arranged as a good-will tour of South Asia. The aircraft, which was flown by Hans Bertram, a German pilot working for the Chinese Navy, carried the German registration D-2151 and was named "Yu-i" (Friendship). The idea was to visit overseas Chinese to make them donate money for the purchase of aircraft for the Nanking Government. On 24 September the F 13 crashed and sank near the Indian coast shortly after leaving Karachi, so it never reached China, but the pilot and mechanic were uninjured.

A pair of Sikorsky S-38B twin-engine passenger transport amphibians were ordered and shipped from the USA in July 1931. One of them was for the personal use of Chiang Kai-shek and it was assembled in Shanghai by Chinese mechanics under the supervision of a United Aircraft mechanic named Haines and the first test flight was made on 14 September. It was then taken to Nanking, where Chiang and Finance Minister T V Soong used it frequently. Former CNAC employee Harry Smith normally flew it. In connection with a general "exodus" of Chiang's aircraft from Nanking prior to his resignation from Government posts in December 1931 Julian Barr flew the Sikorsky to Hangchow.

There was an extensive flood in the Yangtze valley in the summer of 1931 and one of the Sikorskys was intended for food relief work, but it was not test flown for several months. When Charles Lindberg and his wife, who were visiting China, arrived in Nanking on 19 September he placed himself at the disposal of the Government to assist with a survey of the flooded areas. He also used his aircraft, a Lockheed Sirius, to transport medical supplies.

Twelve new DH 60M Gipsy Moths were ordered from Arnhold & Company to supplement the Moths already on hand. They were delivered in Shanghai at the end of September 1931 and were then transported to Nanking. In ad-

In 1933 an additional Junkers K 47 was purchased for donation funds. It was named "T'ien Ch'u". (Wings of China)



Vought Corsair and Douglas O2MC s/n 501.

dition, six DH 60T Moth Trainers and two DH 80A Puss Moths were ordered for Hunan Province, to be stationed at Changsha. It was reported that a contract was signed on 3 November 1931 for 12 Dewoitine fighters, 18 Potez light bomber and observation aircraft, and six Bleriot bombers, but this was probably just a rumour, otherwise this order must have been cancelled later.

A fighter squadron was formed with the Junkers K 47s and during a parade in Nanking on 10 October this squadron flew in from Pengpu to Nanking to participate. The Junkers representative in China reported home that he had heard Chiang Kai-shek, who was present at the occasion, say that the Junkers squadron was "the best in the whole air force". Another aerial demonstration was put on in Nanking on 22 November in front of the members of the 4th National Party Congress.

Only two aircraft, Chang Hsueh-liang's Ford Tri-Motor and a Potez 25, escaped the Japanese occupation of Manchuria on 18-19 September. Julian Barr of United Aircraft temporarily few the Young Marshal's Ford, which was normally piloted by Perry Hutton. Barr continued to fly for both Chiang Kai-shek and Chang Hsueh-liang. Chang ordered a second Ford, a former company demonstrator with luxury interior, to be delivered in December 1931. It left the USA only in March 1932, however, and after assembly at Hong Kong it left from there in April with Hutton at the controls and reached Peking on the 24th of that month. Both Fords were based at Ch'ingho, where there were three good hangars.

The Nanking Air Force had been reorganised into eight squadrons in 1931, seven for light bombing and observation and one two-seat fighter squadron. Each squadron now nominally consisted of nine aircraft (three flights of three aircraft each) and twenty flying officers. The 1st Air Squadron with eight Douglas O-2MCs and Corsairs, which was commanded by Yen Yu-tsung, arrived at Nanyüan in December 1931. At that time the 2nd and 4th Air Squadrons were stationed in Kiangsi, the 3rd at Hangchow, and the 5th, which had been sent to Kiangsi for Red "bandit" suppression in October, was split up between Kaifeng and Pengpu, Anhwei. The 4th was expected to move to Peking.

American Lieutenant Robert M Short, who represented the Boeing Company, was engaged as expert and flying instructor in June 1931. At the same time German pilots Erich Brammen and Hermann Frommherz were hired for seven months to train Chinese pilots on the K 47. The Germans were stationed on the military aerodrome at Chengchow from December 1931 and belonged to what was called the Pursuit Squadron. Erich Brammen arrived in Shanghai on 29 August, but on 10 January 1932 he was killed when a low-flying aircraft hit him in the head while sitting in the cockpit of a K 47.

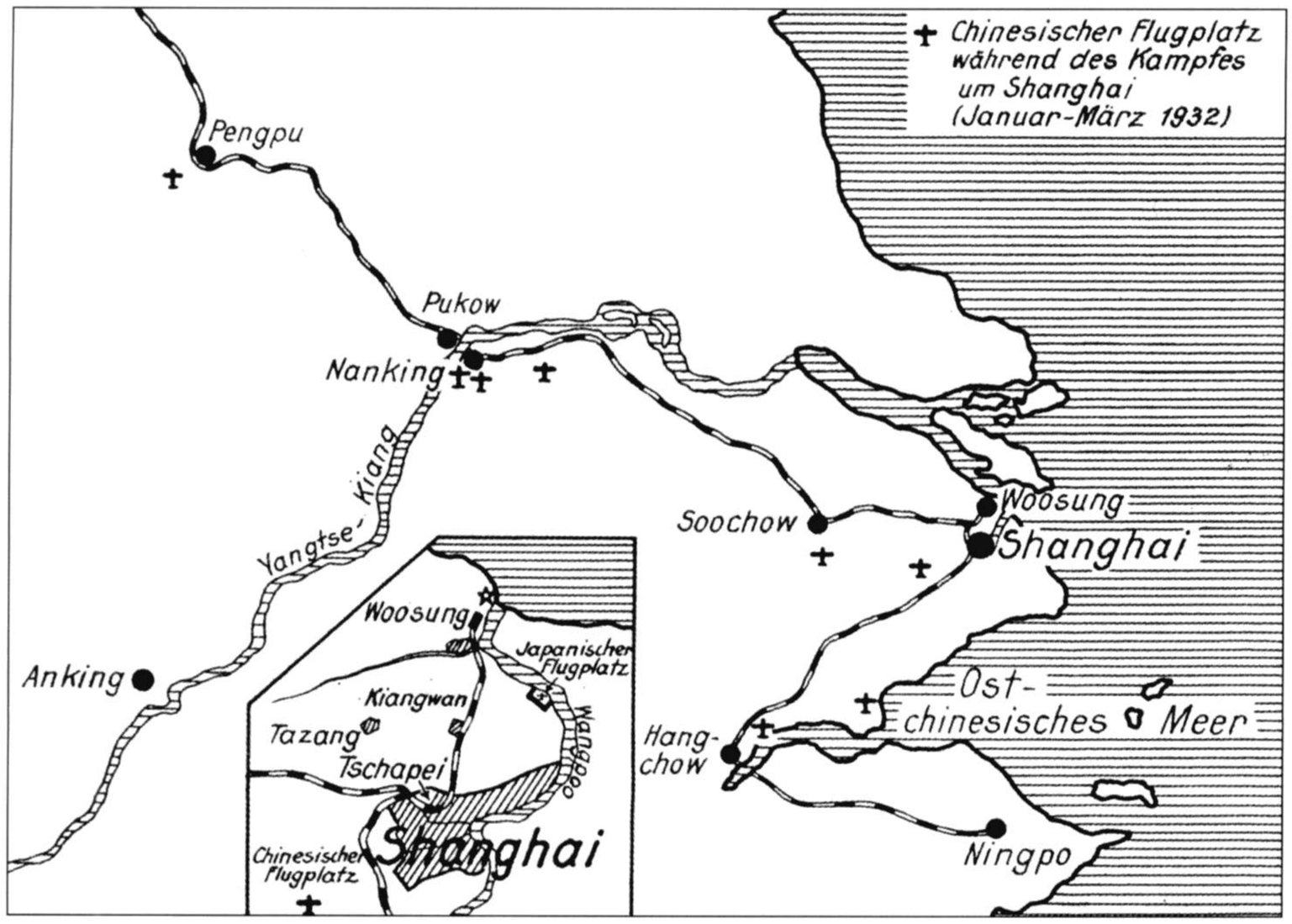
In January 1932 the Aviation Class of the Military Flying School was moved from Nanking to Chien Chiao, 8 miles SSW of Hangchow. This establishment, which at that time consisted of an airfield with a workshop and no hangars, was to become the new Central Aviation School on 1 September 1932.

Meanwhile the CAF's operational units were moved around constantly. The 2nd Squadron moved from Kiangsi to Chengchow, Honan, in January 1932 and by the end of that month the 6th Squadron was stationed in Nanking. The 1st had moved from Peking to Chengchow, the 4th had moved from Kiangsi to Chengchow and the 2nd was about to move from Chengchow to Nanking to prepare for operations against the Japanese at Shanghai.

The "Shanghai Incident" of 1932

On 28 January 1932 Japanese Marines attacked the Chinese 19th Route Army at Chapei, a northern suburb of Shanghai, adjacent to the International Settlement. Fighting continued for six weeks in what came to be called the "Shanghai Incident", during which Japanese aircraft attacked the airfields at Chien Chiao, Suchow, Nanking, Hungjao and Lunghua.

The defenders' air assets consisted of a single Boeing 218, two Blackburn Lincocks, eight Junkers K 47s and about 20 Corsair, Douglas O-2MC and Waco two-seaters. Some of the aircraft had arrived from Canton to join in the fight, and there were a few transports as well: a Junkers W 33 used by the Air Force Commander-in-Chief Huang Ping-heng and a Cantonese Ryan B-5 Brougham. The Japanese were much superior in numbers with about 40 fighters, 25 reconnaissance aircraft, 40 light bombers and 10 seaplanes. The K 47 squadron was dissolved when the fighting broke



German map showing the locations of Chinese and Japanese airfields during the "Shanghai Incident".

out and a pair of Junkers K 47s was assigned to each reconnaissance squadron, which consisted of about six aircraft each.

Fighting started at Shanghai's northern railway station, along the Shanghai-Woosung railway and at the Woosung Fort. The Japanese had built a small aerodrome near the Whangpoo River, halfway between the Woosung Fort and Shanghai, which they used. They also employed the aircraft carriers "Kaga" and "Hosho", which moved between the Whangpoo, the mouth of the Yangtsekiang and the East China Sea off Hangchow. On 31 January the Japanese Expeditionary Forces dispatched more than 30 carrier aircraft for a " show of force" flight over Shanghai. On 3 February, 18 aircraft from the "Kaga" and "Hosho" were fired at by Chinese anti-aircraft artillery.

At the beginning of the fighting an attack on Japanese-held territory was made by a number of Corsairs and O-2MCs escorted by two K 47s and two Lincocks. The K 47s shot down one Japanese fighter. One of the Lincocks was hit, but the pilot managed to land the damaged aircraft at Hungjao. It crashed when another pilot tried to fly it away from there, however. This incident, described above with details from a rather thorough German report, is probably the one related in the following way in an American intelligence report: "On 4 February a Nanking aviation squadron flew from Nanking to Shanghai with nine aircraft. The Chinese engaged several Japanese bombers over Chapei and according to preliminary reports three Japanese aircraft were brought down."

The following version of what happened on 4-6 February is from a Chinese publication[14]. On 4 February three E1Y reconnaissance aircraft from seaplane carrier "Notoro" escorted by three A1N fighters from the "Kaga" attacked the Chinese 19th Route Army and on the following day a B1M from the "Hosho" was shot down by ground fire. At the same time three B1Ms escorted by three A1N fighters from the "Hosho" were engaged in an air battle with Chinese aircraft, including Blackburn Lincocks. Chinese pilot J D Singh (Colonel Chu Da-shan, a naturalised Chinese citizen of Indian origin) was wounded and eventually died in hospital. On 6 February three B1Ms and three A1Ns took off from the "Hosho" to bomb a field at Chenju, where they destroyed a Lincock piloted by Wang Yu-chuan, deputy leader of the 6th Squadron, on the runway.

The 2nd Canton Aviation Squadron with seven aircraft under Ting Chi-hau arrived in Nanking on 16 February. On 22 February the Japanese attacked Nanking and Suchow aerodromes with three B1M bombers from the carrier "Kaga" and three A1N fighters. The

14 Translation supplied by D Y Louie.
15 American Robert Short was formerly a representative of L E Gale and had been demonstration the Boeing fighter.had been working as an instructor in the CAF since 1931.

Landing mishap with a Junkers K 47 two-seat fighter.

Hankow Military Aerodrome, August 1932

By August 1932 thirteen aircraft were based at the military aerodrome north-west of Hankow: a single Moth, eight Douglas O-2MCs and four Vought Corsairs. The hangars had been partially destroyed by the floods during the previous year. The local Hankow Aviation Department was headed by Colonel Yang.

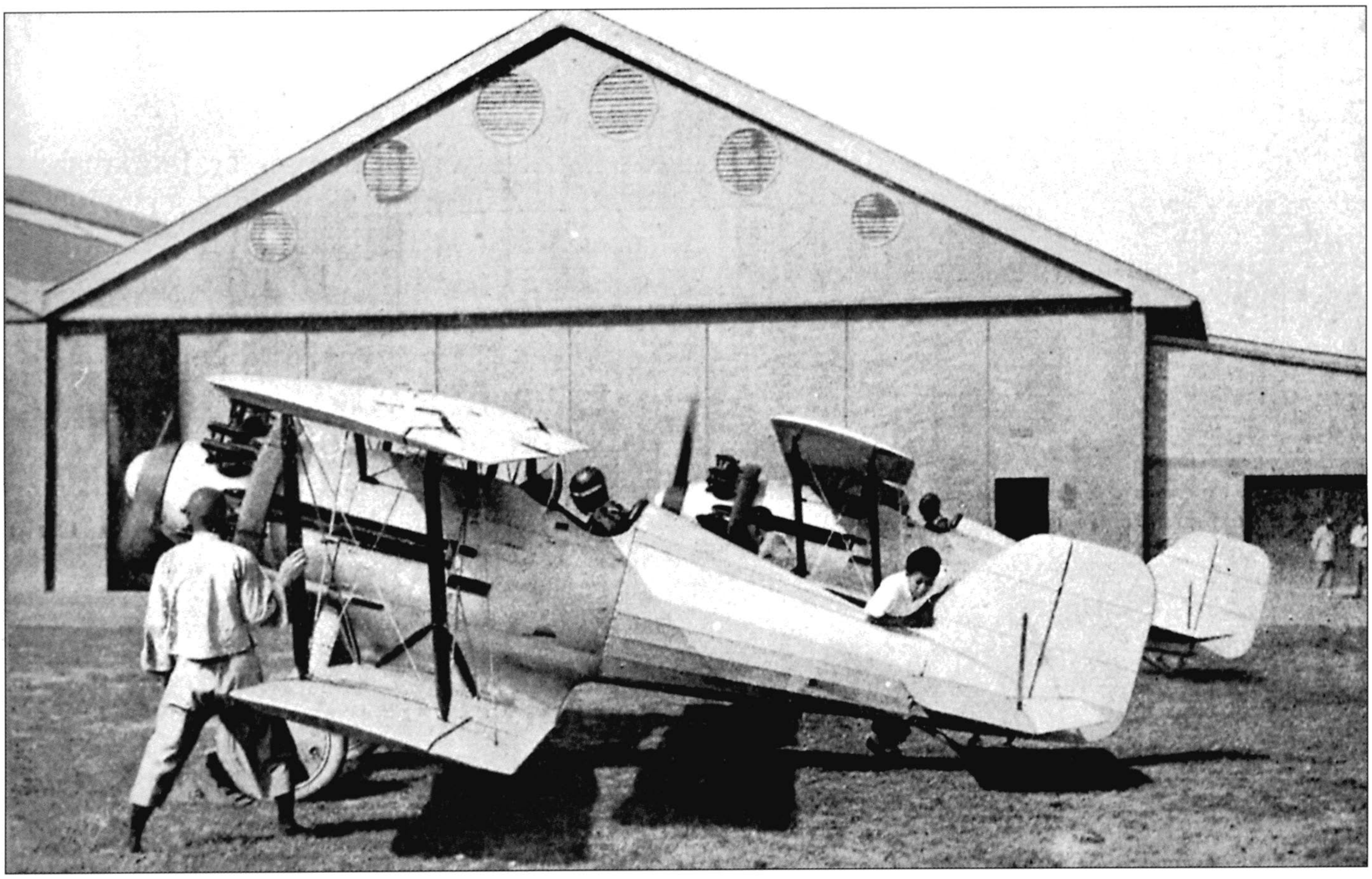
squadron stationed at Suchow, consisting of Corsair and Douglas machines and the Boeing fighter, tried to defend the aerodrome. Robert Short[15], who piloted the Boeing, managed to damage a Japanese aircraft, but was hit himself and crashed to his death.

The 2nd Squadron was ordered to move from Nanking to Chien Chiao, Hangchow, on 20 February. Since a Japanese aircraft carrier had left Shanghai, an attack could be expected and on the 25th the unit was ordered to evacuate to Chiaosi (Chiaotze), an auxiliary base at Panpu.

Early in the morning of 26 February the Japanese attacked Hangchow with nine B1M bombers and six A1N fighters from the "Kaga" and the "Hosho" and they attacked both Chiaosi and Chien Chiao aerodromes. The Corsair squadron that was stationed at Hangchow had been assigned two K 47s. Some of the CAF aircraft scrambled to defend themselves and two of the Corsairs and K 47 P-4 were soon damaged and forced to land. The other aircraft had been ordered to wait until their engines were sufficiently warmed up. Squadron Leader Shih Pang-fan got wounded in the K 47 and Chiao Fu-ming (Chow Pu-ming), a Corsair pilot from the 6th Squadron, later died from his wounds. One B1M had been shot down. All damaged Chinese aircraft were repairable. Fighting continued until 3 March, when the Japanese raided Hungjao and a truce was finally signed on 5 May 1932.

Hungjao aerodrome, which was situated 3 miles west of Hungjao city, 5 miles south-west of the French Concession in Shanghai, was completely demolished on 23 February and all hangars (there were two hangars and eight matshed hangars), workshops and other buildings were destroyed. Shanghai's second aerodrome, Lunghua, was on the Shanghai-Hangchow railway on the left bank of the Whangpoo River, east of Lunghua and 4 miles from Shanghai. It had a repair shop, one brick hangar, one steel hangar and a seaplane ramp and although originally a military field, it was now used by CNAC and Eurasia.

The Suchow aerodrome was situated 1 mile south of the city wall and had two small matshed hangars which were destroyed by Japanese bombs. At Chiaotze, 11 miles north-east of Hangchow on the Shanghai-Hangchow railway, the old hangars were destroyed in February, when 103 bombs were dropped during two raids. There were two aerodromes in Nanking. The Hsi Hua Men Field in the southern part of the city within the city walls had a well-equipped repair shop, which had been in use for about two years. Machinery



Newly arrived Balckburn Lincock fighters after assembly at Lunghua, Shanghai.

The Chinese Air Force flying school at Nanking had used the de Havilland DH 60 Moth trainer since1929. They were replaced by the Fleet in 1932.

for major repairs was being moved to the new field at Ta Chia Chang, however. There were 14 large wooden hangars at Hsi Hua Men, but this field was gradually abandoned by the military. Ta Chia Chang (Tung Chi Men Field), south-east of the city, had a major repair shop, administrative buildings and two hangars. At Hsia Kuan, on the waterfront north-west of Nanking, there was a seaplane base without hangars.

New Build-Up

The Japanese bombing during the "Shanghai Incident" in January-March 1932 gave a great impetus to military aviation in China. Funds were raised by public and private subscription and aircraft were presented to the Government. On 2 April a National Aviation Construction Commission headed by T V Soong was founded to have custody of the funds raised. A memorial service was held in Nanking on 16 July 1932 for those members of the Air Force who were killed during the Japanese invasion of Shanghai and Woosung. According to General Chen, the Vice-Minister for War, over 30 people had been killed.

In April 1932 General Huang Ping-heng resigned from his post as Head of the CAF. General Mao Pang-tsu (Peng-tsu), Chiang Kai-shek's brother-in-law, became temporary head of the Aviation Bureau, but Huang was soon reinstated again. It appears that Huang was annoyed by Chiang Kai-shek's and T V Soong's personal interference with the Aviation Bureau's affairs. Chiang had used appointments to the Air Force as a means to reward favoured youths of his selection. Soong had hired Robert Short to fly the Boeing against Huang's advice and after he had been discharged from the Aviation Bureau because of shortcomings. The loss of face due to the role the CAF had played in the fighting around Shanghai had finally brought about Huang's resignation.

In May 1932 an American intelligence officer visited the new Ta Chia Chang aerodrome in Nanking. There were no airworthy aircraft except for the Sikorsky S-38 belonging to Chiang Kai-shek, which was still flown by Harry Smith who was Chiang's private pilot. All other aircraft were at Pengpu, Anhwei. The CAF was now said to consist of six bomber squadrons with five Douglas, four Corsairs and two Moths each. The 2nd Squadron was equipped with Junkers K 47s and Corsairs. Colonel Art Lim had previously been in charge of the repair shop, but had resigned with Huang and gone to Canton. There was an expert German mechanic. Several aircraft were under repair: six Junkers K 47s, a Junkers W 33 ambulance, which had been slightly damaged during the Hangchow bombing[16], two Douglas O-2MCs, a Corsair, the

A large number of Fleet trainers were acquired for the Central Aviation School at Chien Chiao.

Fleet trainer named "Peiping Shih-4".

BFW M 18 mapping aircraft (see later), and an old Stinson. The K 47s were later transferred to the new 8th Squadron.

On 3 June a tragic accident occurred at Pengpu when a bomb dropped from a Douglas aircraft piloted by Sub-Commander Chao Ching-hsien and killed 22 people and injured 41. He had returned from a sortie over "enemy territory" and was not aware of a bomb still clinging to the bomb racks of his aircraft. By August 1932 two squadrons, the 1st and 5th, were based at Pengpu, the 2nd and 6th were in Nanking, the 3rd and 4th at Hankow and the 7th at Nanchang.

Very few aircraft were received in 1932. On 15 August a Junkers K 53 was impounded by Central Government troops at Loyang and taken to Hankow. The Nanking Government promptly took over it when it transpired that it had been secretly purchased by General Liu Wen-hui at Chengtu in Szechwan. In 1932 General Liu Chih, Chairman of the Honan Provincial Government, raised a sum through private subscriptions with the intention to buy fighter aircraft for presentation to the Central Government. In addition, the Shanghai-based National Aviation Association had decided to collect funds sufficient for the purchase of 18 aircraft.

The first donation was three Armstrong Witworth AW 16 fighter biplanes, which had been ordered by Honan together with a supply of spares from the Far East Aviation Company (FEACo) about May 1932. When they arrived in Shanghai, the Aviation Bureau arranged that A D Bennett of the FEACo and two Chinese pilots flew them from Hungjao to Kaifeng in Honan on 9 October. After much celebration they went to Nanking and then proceeded to Chien Chiao early in December. The American instructors at Chien Chiao did not like the "non-American" aircraft and Bennett had to go there once more and put the machines through "all the latest aerobatics" to prove that they were all right. Two more of this type, bought by Honan citizens, arrived in Shanghai at the end of March 1934, were delivered to Kaifeng in Honan in May and were handed over to Central Government on 28 May. Citizens of Ningpo bought a fifth AW 16 that was delivered later in the summer.

The Jouett Mission and the Central Aviation School

Early in 1932 France offered to send a military air mission and to reorganise the Chinese Air Force. General Ch'ao, Vice Director of the Aviation Bureau approached British representatives in China to ask if Great Britain was prepared to send a military aviation training mission and aviation experts to China. Flying training in England was also discussed, but in September the British offer made was rejected as too expensive.

In the meantime a request had gone out in March 1932 to the USA and Colonel John H Jouett was finally engaged for three years to lead an American Aviation Mission with 15 members. Jouett and a number of instructors boarded the "President Hoover" on 17 June 1932 and arrived in Shanghai on 8 July. The flying instructors comprised Roy L Holbrook, Walter C Kent, Morris R Knight, Christopher Mathewson, Harry T Rowland (Chief Instructor), Roland L Sansbury, Ellis D Shannon and T L Taylor. John Schweitzer arrived in October. Mechanics and engineers included Gerardus B Clark (Chef Engineer), James A Coughlin, W H Pennington, H Poncetti and William A Spencer. Frank G Gay, Donald R Stevenson, Edward W Winegerter and Paul G Zimmerman and they arrived in October-November. Dr Harold Cooper was engaged as Flight Surgeon.

The aerodrome at Chien Chiao, 8 miles outside Hangchow, where the new training centre was be located,

16 This aircraft had been flown by General Huang Ping-heng.

Central Aviation School Aircraft Inventory, September 1933

By September 1933 the Central Aviation School had 28 Fleets (another five were on order), 12 Douglas O-2MC4s (eight on order), 10 Fiat BR 3s, 18 Hawks (another 14 on order), one Corsair (15 on order), and a few other aircraft. The school's repair depot had completely rebuilt and overhauled 12 Corsairs, three Douglas O-2MCs, three Fleets, two Junkers K 47s, one AW 16, two Ford Tri-Motors (including Chiang Kai-shek's) and a Sikorsky S-38 (T V Soong's). In addition to this 30 Fleets, 12 Douglas O-2MC4s, 12 Corsairs and 17 Hawks had been erected and tested.

General Mao was Director of the school. Of the 23 Fiat BR 3 bombers bought, ten had been formed into a squadron and despatched to Nanking and the rest was kept at Chien Ciao. The original order was for 20 aircraft so it seems at least three more were delivered in 1933. "The Aeroplane" for 13 December 1933 reported that 23 Fiat BR 3s had been bought in 1933, and the British Air Attaché's annual report for 1934 listed 24 BR 3s. A French report dated 20 November 1933 mentions 23 Fiat BR 3s as well. The fact that 20 aircraft of this type remained by January 1937 would also seem to indicate that more than 20 were originally acquired.

had been laid out in 1928-29 and needed improvement. The old barracks extending out into the middle of the field were torn down and two small Junkers all-metal hangars were erected, each with a capacity of about 15 aircraft. The buildings damaged by the Japanese had been restored and a large brick, concrete and steel hangar (350 x 180 ft), repair shops (150 x 170 ft with carpenter and dope shops), radio station, a large administration building including classrooms and an auditorium were built. Old barracks were completely renovated to become cadet quarters.

The Central Aviation School, which was under the command of General Mao Pang-ch'u, was formally opened on 1 September and Jouett was appointed Director. One of his first moves had been to order 15 Consolidated Fleet Model 10 two-seat primary trainers from the USA, which reached Shanghai at end of August, were set up and flown to Hangchow, where all had arrived by 15 September. On 9 September two Fleets, s/ns 5 and 8, collided in the air and two people were killed and two injured. Flying instruction started on 15 September with a refresher course for officers. Fifty old pilots were entered and on 15 October, 25 of these graduated, the remainder had been washed out. The purpose of that course was to select Chinese instructors and 11 officers accepted such a post. In September 13 Chinese students returned from the USA, having spent a year studying different branches of aviation there. By December Jouett had drawn up a five-year plan for the development of the Central Aviation School.

By the end of December the aircraft inventory of the

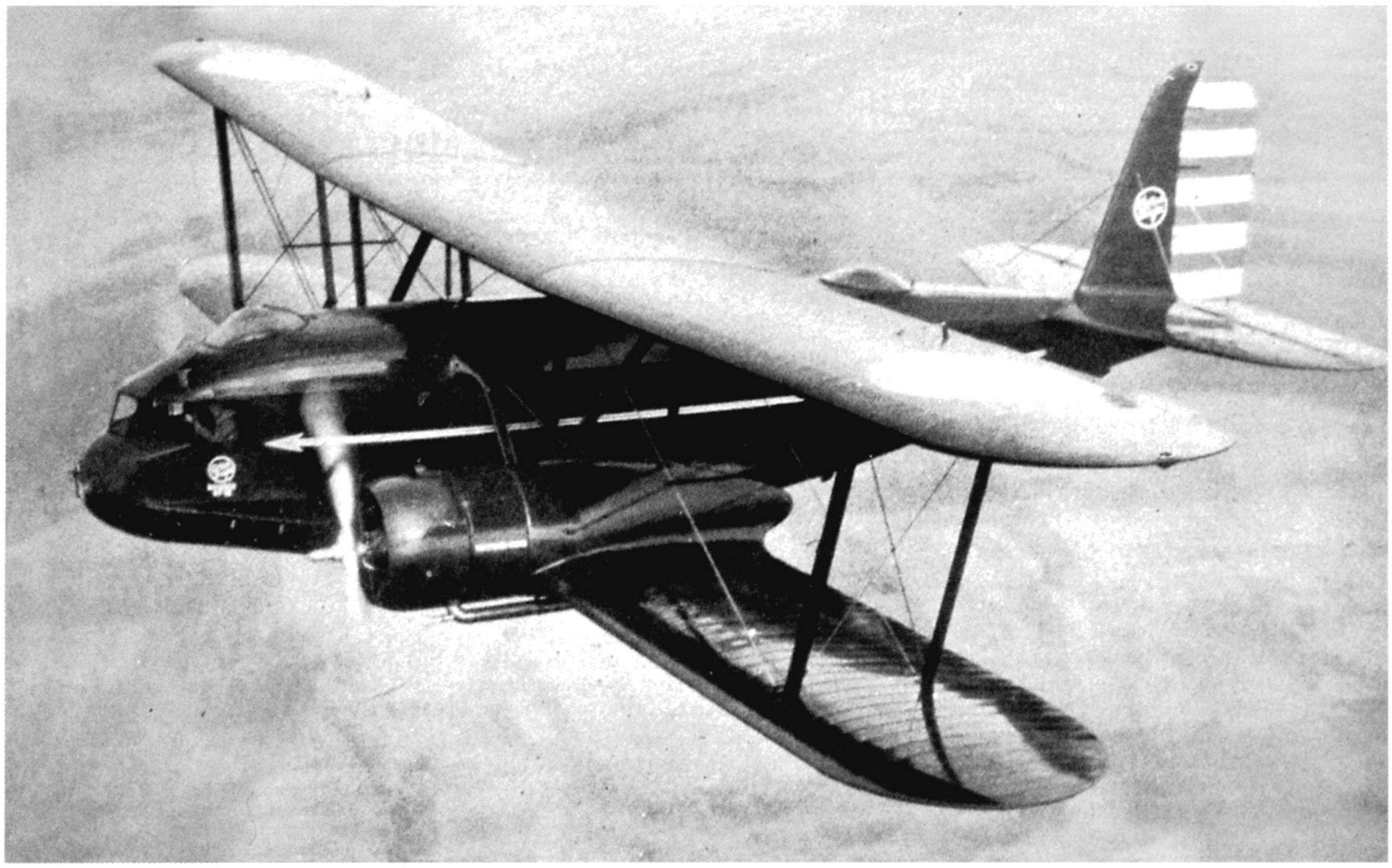
Central Aviation School
(July 1932-September 1933)

Personnel
Lt-Col, later Colonel John H Jouett, Director, later Chief of Mission and Adviser
Lt Gerardus B Clark, Assistant Director for Engineering , later Engineering Officer
1st Lt Harry T Rowland, Assistant Director for Administration, later Assistant Director for Flying Instruction
2nd Lt T L Taylor, Procurement Supply and Accountability Officer, later Flight Instructor (primary training)
2nd Lt E D Shannon, Armament Officer, later Flight Instructor (pursuit)
2nd Lt W C Kent, Flight Instructor
2nd Lt M Reid Knight, Meteorological Officer, later Flight Instructor (bombardment)
2nd Lt L Roy Holbrook, Observation, Photo and Communications Officer, later Flight Instructor (observation)
2nd Lt R L Sansbury, Flight Instructor (pursuit)
Christopher Mathewson, Navigation Officer, seriously injured in a crash on 8.1.1933
John Schweizer, Flight Instructor from 26.10.32
1st Lt Harvey K Greenlaw, Flight Instructor from 25.5.33
Dr Harold Cooper (Flight Surgeon) until 1933
Major Eldridge Adams, Assistant Director for Aviation Medicine, later Flight Surgeon, in charge of Aviation Medical School from 1934
J A Coughlin, Chief Mechanic until 30.8.32
W H Pennington, Mechanic, killed in a crash on 19.10.32
W A Spencer, Mechanic, Chief Mechanic from 5.11.32
H Ponceti, Mechanic
D R Stevenson, Mechanic from 21.10.32
F G Gay, Mechanic from 15.10.32
E W Wingerter, Mechanic from 15.11.32
Alma Wade, Secretary

Classes
Refresher Courses
1st Class 15.9-15.10.32: 50 entered, 30 graduated, of which 11 to instructors and 13 to 1st Bombardment Squadron
2nd Class 2.33: 10 entered, 5 graduated
3rd Class 5.33: 39 entered, 2 graduated
4th Class 6.33: 58 entered, 16 graduated

Cadets
1st Class 15.10.32-15.10.33: 50 of 92 entered
2nd Class 9.33: 112 entered

Central Aviation School consisted of 15 Fleets, six old Corsairs, six Fiat BR 3 single-engined bombers and the three Armstrong Witworth AW 16 fighters presented by Honan. The Fiats were the first of 20, which had been purchased by T V Soong, Minister of Finance, with the refunded portion



The Chinese Air Force acquired the single Curtiss BT-32 Condor that was sent to China for demonstrations in 1934.

of the Italian Boxer Indemnity Fund. They had just arrived in Shanghai and had been transhipped to Hangchow for erection and testing[17]. The contract had allegedly been signed on 30 June by Count Ciano, Italian Charge d'Affaires in China, and T V Soong. A Fiat pilot and a mechanic had accompanied the aircraft and were to stay for six months. The remaining 14 Fiats were expected to arrive within three months.

The five or six DH 60 Moths used until the arrival of the Fleets had been taken out of service. Orders had been placed for 12 Douglas O-2MC4s for use as advanced trainers and negotiations were going on for another 15 Fleet trainers and 15 Boeing or Curtiss fighters. Fifty 500-kg, 200 300-kg and 500 100-kg bombs, and machine gun ammunition had been ordered from Italy.

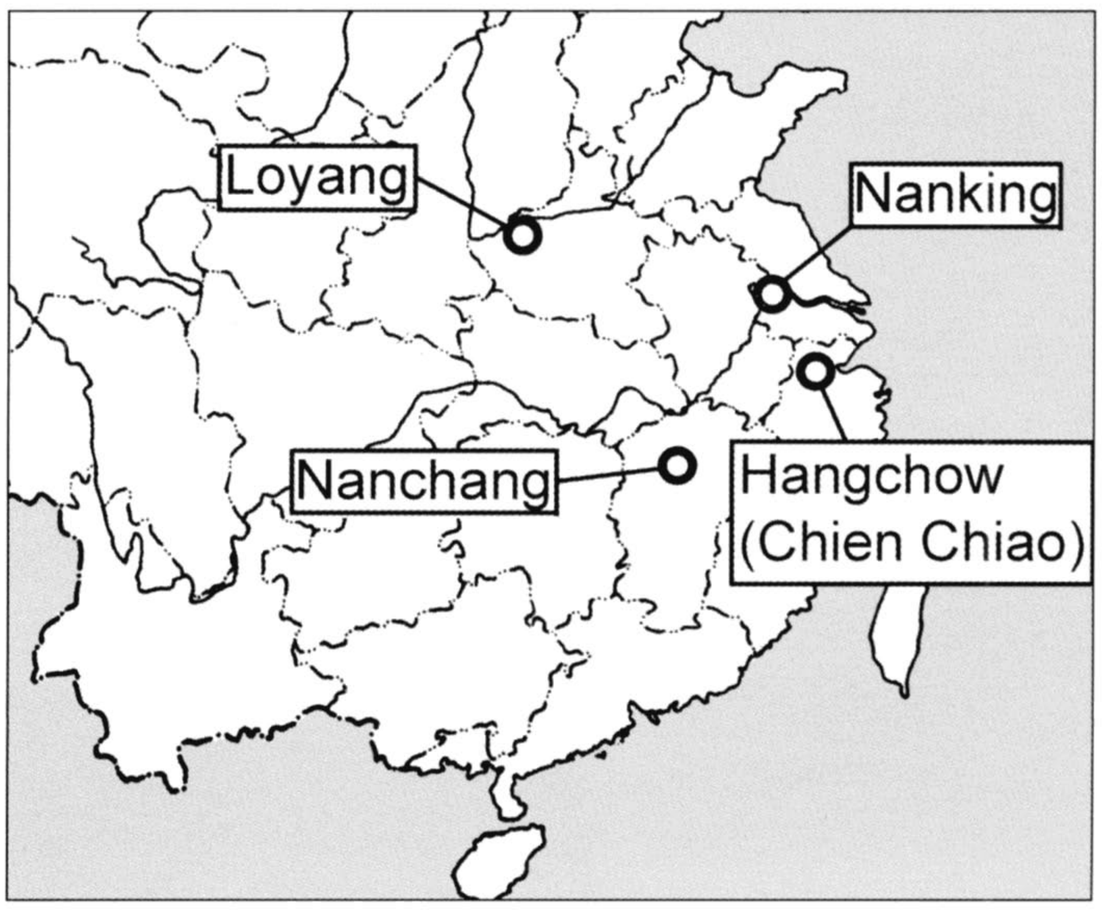
Jouett was acting as general military adviser to the Nanking Government concurrently with his directorship of the Central Aviation School. He prepared a five-year plan for the development of the Air Force and proposed an independent air force with a staff of colonels in charge of personnel, intelligence, operations, finance and supply, and school branches. The Aviation Bureau/Department (Hang K'ung Shu) moved from Nanking to Hangchow in October 1933, where the office commenced functioning on the 16th. General Huang Ping-heng became Chairman of the Military Affairs Commission and was replaced by General Ko Ching-an (Keh Chung-an) as Chief of the National Aviation Administration. Nominally this office, often called the Aviation Bureau, was still under the Ministry of War, but in actual practice it was subject to personal control of Chiang Kai-shek.

17 The Fiat BR 3 bombers were purchased through G H Lautenberg of the Compagnia Italiana d'Estremo Oriente.

The Aviation Bureau now comprised the following departments: A-1 Administration (Colonel Tsao), A-2 Intelligence, A-3 Operations and War Plans (General Shen), A-4 Supply (C K Tu), A-5 Schools (P T Mao) and A-6 Technical Branch (Colonel C T Tien).

Hangchow (Chien Chiao) New CAF Centre

When the Aviation Bureau moved from Nanking to Hangchow in October 1932 most of the CAF's activities were centred on Chien Chiao. Plans were laid out for a massive reorganisation and new aircraft were needed. In the spring of 1933 Hawker agents Reiss, Massey & Co Ltd offered to deliver 108 Hawker Fury, 72 Demon, 36 Audax and 72 Hart single-seat fighters and two-seaters, but the American influence through the Jouett mission was strong and



Main Chinese Air Force bases.

Nanking Air Force Aircraft

The following list of Nanking Air Force aircraft, dated December 1933, was published in the China Year-Book for 1934:

30 Curtiss Hawks, one Curtiss Robin, 28 Douglas O-2MCs, two Fairchilds, 29 Fleet trainers, three Ryans, one Stinson, two Sikorsky S-38s, 15 Vought Corsairs, one Raka Pelikan, 10 Focke-Wulf Kiebitz, one Junkers K 47, two Junkers, six Junkers "large", two Junkers "small", three of an unknown German type, one Potez, three Armstrong-Witworth AW 16s, nine Moths, one Caproni Ca 101, 23 Fiat BR 3s and one Fiat CR 30.

the British competition stood little chance against the American aircraft industry.

Instructor W H Pennington died in a crash on 19 October 1932 and C Mathewson was seriously injured in another crash on 8 January 1933. He had gone up for a flight with his newly wedded wife in the Sikorsky S-38 that was used by finance minister T V Soong. On 10 January 1933 there was a fatal accident when instructor Li Chun-te and a student crashed.

By January 1933 there were 13 Americans at the Central Aviation School (nine pilots and four mechanics) and by March the following aircraft were present: 15 Fleet 10s, three Armstrong-Witworth AW 16s, five Junkers K 47s, 12 Douglas O-2MCs, five Fiat BR 3s and a single Vought Corsair. Twelve Douglas O-2MC4s had arrived in China in January and were on their way and 15 Fleets and a Curtiss Hawk fighter were on order, the latter for test purposes.

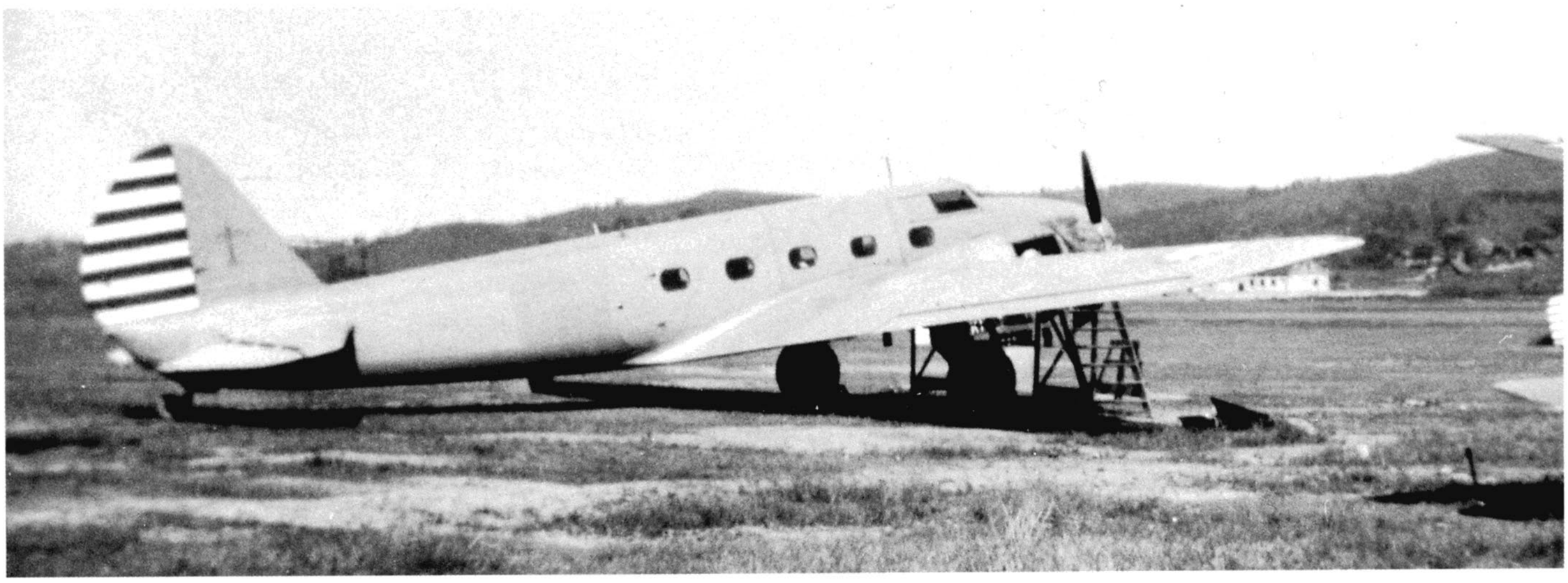
Later in March 1933 the Central Aviation School was temporarily moved to Loyang in Honan due to construction work on the Hangchow aerodrome. Twenty-seven aircraft were flown there on 14-15 March and some 240 students travelled by rail. The school remained at Loyang only for a short period until it was moved back to Chien Chiao. By the end of March the second batch of 15 Fleets had arrived and the number in service rose to 29. Jouett had recommended the CAF to buy either the latest Boeing single-seat fighter or the Curtiss Hawk and a demonstration of a Curtiss Hawk by James Doolittle at Chien Chiao in April was followed by an order for 18 examples.

A national organisation for promotion of aviation, the National Aviation Association (or League), was established by the Government on 20 May 1933. Funds raised in Shanghai were intended for the payment of 15 Curtiss Hawks. The first one, almost certainly the demonstration aircraft, was named "Shanghai No 1" on 1 June 1933[18]. Five more were presented and named at Hungjao on 9 September and the other 12 were at that time being assembled. These 17 machines had been shipped from the USA in June and July, and another 14 ordered by the Nanking Government were shipped in August. The total number acquired was 32, but two of these had been written off by the beginning of December 1933.

A part of the monthly salary of practically every government employee was retained for the purpose of buying aircraft and a national lottery was organised, from which large sums were secured. Aircraft were named after cities, railways, provinces and organisations, and commissioned with an elaborate ceremony which was given much publicity. On 18 November, for example, an aircraft of unknown type was named "SNR & SHNR" and handed over to the CAF at Hungjao by the Shanghai-Nanking Railway & Shanghai-Hangchow-Ningpo Railway.

On 12 November 1933 a large official review of the Chinese Air Force was staged in Nanking. One squadron of Fleet trainers, one of Douglas O-2MCs and two of Curtiss Hawk fighters were displayed after having been flown to Nanking by the pilots of the Central Aviation School led by Jouett and flying instructor Knight.

Chang Hsueh-liang was reported in 1933 to keep his two private Ford Tri-Motors at Nanyüan, Peking. In addition he was said to have a Fairchild "Commercial" (possibly a Fairchild 22), a Bird (possibly the three-seat Bird CK that was imported late in 1931) and four Avro aircraft. The Tri-



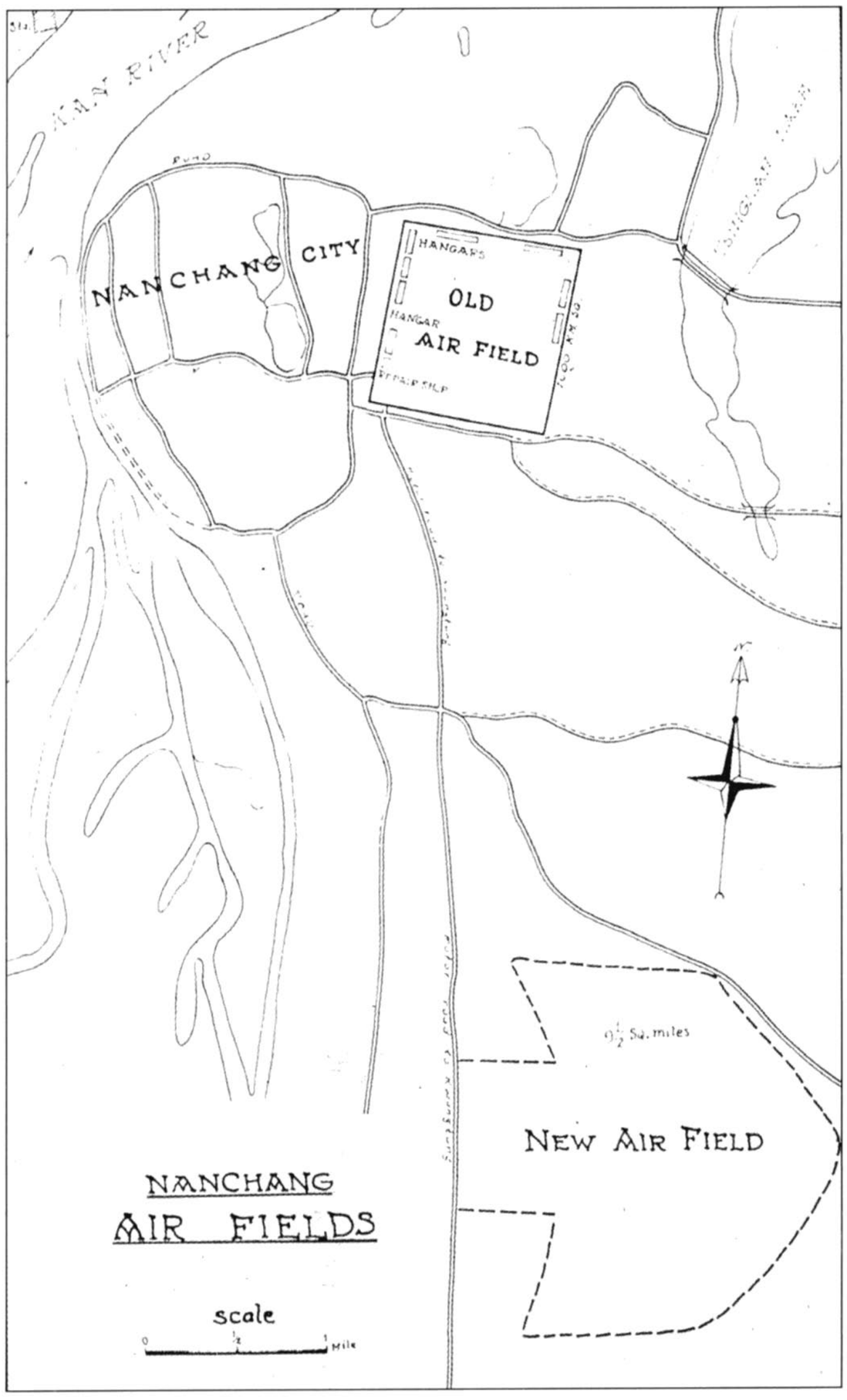
The first of two Boeing 247 transports used by the CAF was imported for Chang Hsueh-liang in 1934 and the other one arrived in 1938.

CAF Aircraft 1934

On 15 June 1934 the following aircraft were in service at the Central Aviation School at Hangchow:

28 Fleet trainers, eight Douglas O-2MC4s (another 12 O-2MC5s were en route), 15 Douglas O-2MCs and O-2MC2s, 28 Hawks, two old Corsairs, two V-65 Corsairs, four AW 16s, one Fiat CR 30, one Junkers K 47 and three Caproni transport-bombers (one Ca 101 and two Ca 111s).

At Nanchang were nine Fiat BR 3 bombers and 28 Corsairs. Six of the Northrops had arrived. A total of 35 Corsairs were en route to China, including the 20 V-92Cs with floats, which were to be sent to Lake Tai Hu (?), near Shanghai, where a seaplane base was being constructed. A total of 20 Northrops, 22 Douglas O-2MC6s and 30 Fleet trainers were to be assembled in the CAMCO factory during its first year of operation, before July 1935.



18 Hawk "Shanghai No 1" crashed and was written off on 1 November 1933.

Defence Plan, submitted by Jouett on 27 July 1934

Zone I
AA: Peking, Tientsin
FLA: Paoting (one bombardment squadron and one pursuit squadron), Tsinghsien (one observation squadron)
Chengting, Tehchow, Tsinan
BA: Loyang (one bomber group minus one squadron), Kaifeng (one pursuit group minus one squadron), Kweiteh (one observation group minus one squadron)
ID: Chengchow (bombs, ammunition, fuel, etc, for ten missions)
BD for Zone I and II: Sinyang (or Kiaoshan) (repair facilities, supply of bombs, ammunition, fuel, etc, for 30 missions

Zone II
AA: Haichow
FLA: Ichow (one pursuit squadron), Hwaian (one bombardment squadron)
IA: Yenchow, Pengpu
BA and ID: Suchow (one observation squadron, one pursuit group minus one squadron, one bombardment group minus one squadron)
BD: See Zone I

Zone III
AA: Shanghai
FLA: Nanking (two observation squadrons), Changchow (one bombardment squadron), Soochow (one pursuit squadron), Huchow (one pursuit squadron), Ningpo (one bombardment squadron)
School and Auxilliary Depot: Hangchow (to be used only in an emergency)
IA: Anking
IA and ID: Chuchow (repair facilities, supply of bombs, ammunition, fuel, etc, for ten missions)
HQA and BD for Zones II, IV and V: Nanchang (two pursuit groups minus one squadron each, two bombardment groups minus one squadron each, one observation group, full repair facilities, supply of bombs, ammunition, fuel, etc, for 30 missions)

Planned total number of aircraft
Bombers (4 groups): 120, Pursuit (4 groups): 180
Observation (3 groups): 135

Abbreviations
AA - Advanced Aerodrome
BA - Base Aerodrome
FLA - First Line Aerodrome
HQA - Headquarters Aerodrome
IA - Intermediate Aerodrome
BD - Base Depot
ID - Intermediate Depot

Aircraft Inventory, Central Aviation School at Chien Chiao, November 1934

On 1 November 1934 the Central Aviation School at Chien Chiao, the largest and most modern aerodrome in China, had 40 Fleets, 20 Douglas O-2MCs, 21 Northrops, 14 Corsairs and 18 Hawks. According to the British Air Attaché's annual report for 1934 there were 30 Fleets, eight Douglas O-2MCs, nine Douglas O-2MC4s, 12 "old" Corsairs, 15 V-65 Corsairs and 20 Northrops, but the exact date for these numbers was not specified.

Aircraft seen at Nanchang, December 1934

24 Fleet trainers, which were used by the instructors of the Italian Air Mission, six Douglas O-2MC4s, six Vought V-65C Corsairs, an Avro 637, two Armstrong Witworth AW 16s, a Caproni Ca 101, two Caproni Ca 111s, two Fiat BR 3s, a Fiat CR 30, a Junkers, a DH 80A Puss Moth, a Ryan Brougham, a Sikorsky S-38 and a Waco.

Motors were, however, turned over to Chiang Kai-shek and TV Soong in the spring of 1933.

It is difficult to determine exactly how many of the different Vought Corsair versions that were delivered to China. A Vought V-65-CD, called the "New Corsair" in China, was sent for demonstrations in 1933 and twelve V-65-Cs were ordered from United Aircraft Exports (UAE), delivered in August 1933 and erected at Chien Chiao[19]. In September the same year 15 V-65-C1s were ordered, and the total number of this variant purchased was apparently 32. The first machines were shipped in January 1934 and by mid-May 1934 eight had arrived and another 24 were on their way. One of them crashed on 12 July 1934 before delivery and UAE company pilot Carl Nahmacher was killed. The overall total of V-65s is usually given as 42, but judging from intelligence reports it seems that the correct number might have been 44.

The T'ien C'hu Seasoning Powder Factory purchased a single Junkers K 47 from Siemsen & Company and presented it to the CAF. It was a former company test aircraft, which had been refurbished for delivery to China by AB Flygindustri. The name "T'ien C'hu" (Heavenly Chef) was painted on, but during the presentation ceremony at Hungjao on 15 July the K 47 crashed when being displayed by German pilot Graf zu Castell. It was sent back to Germany for repairs. In March 1934 it was back at Hungjao and on the 18th it was named "T'ien Ch'u No.1" and handed over to the CAF. Siemsen had decided to deliver the two-seat Junkers A 50 demonstrator originally sent out to China in 1931 for free as a compensation for the late delivery of the K 47. It was named "T'ien Ch'u No.2" and presented to the China Aero Club.

About June 1933 General Ko Ching-an resigned and was replaced by General Hsu Pei-keng as Head of the Aviation Bureau and Commander-in-Chief of the CAF. Jouett was attached to his staff as adviser. In August 1933 the Aviation Department was moved from the Ministry of War to the National Military Council. Squadrons had now been renamed after their function. The 1st Bombardment Squadron at Nanking (with nine Fiats and six Corsairs) was ordered to go to Nanchang for operations against the communists when ready and bombing instructors Reid Knight and Roy Holbrook were sent to Nanking to improve the proficiency of the crews assigned to this unit. The 2nd Observation Squadron at Hangchow, the 3rd Observation Squadron at Nanchang and the 4th Observation Squadron at Hankow were to be retrained and overhauled.

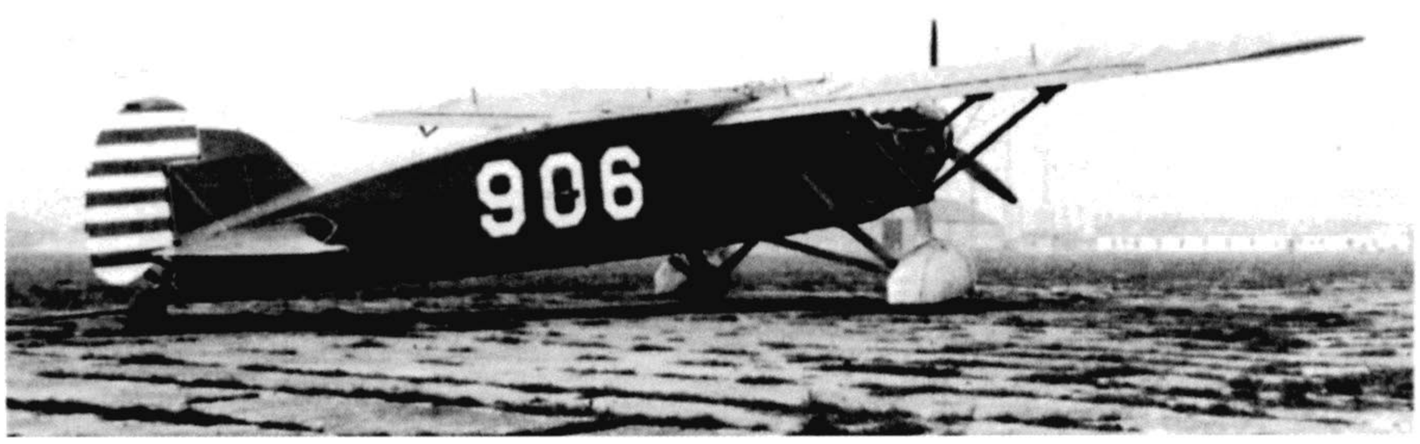
On 21 December 1933 the Central Aviation School's aircraft inventory comprised 28 Fleets, 12 Douglas O-2MCs, 18 Hawks, 18 Fiats, two K 47s, two AW 16s, one Fiat CR 30 and a Caproni 101. A total of 33 Corsairs were on order and en route to China. It was reported that 19 Boeing bombers were about to be ordered but an unexpected price change had prevented final arrangements. Negotiations for 14 Northrop light bombers were going on.

Italian Involvement

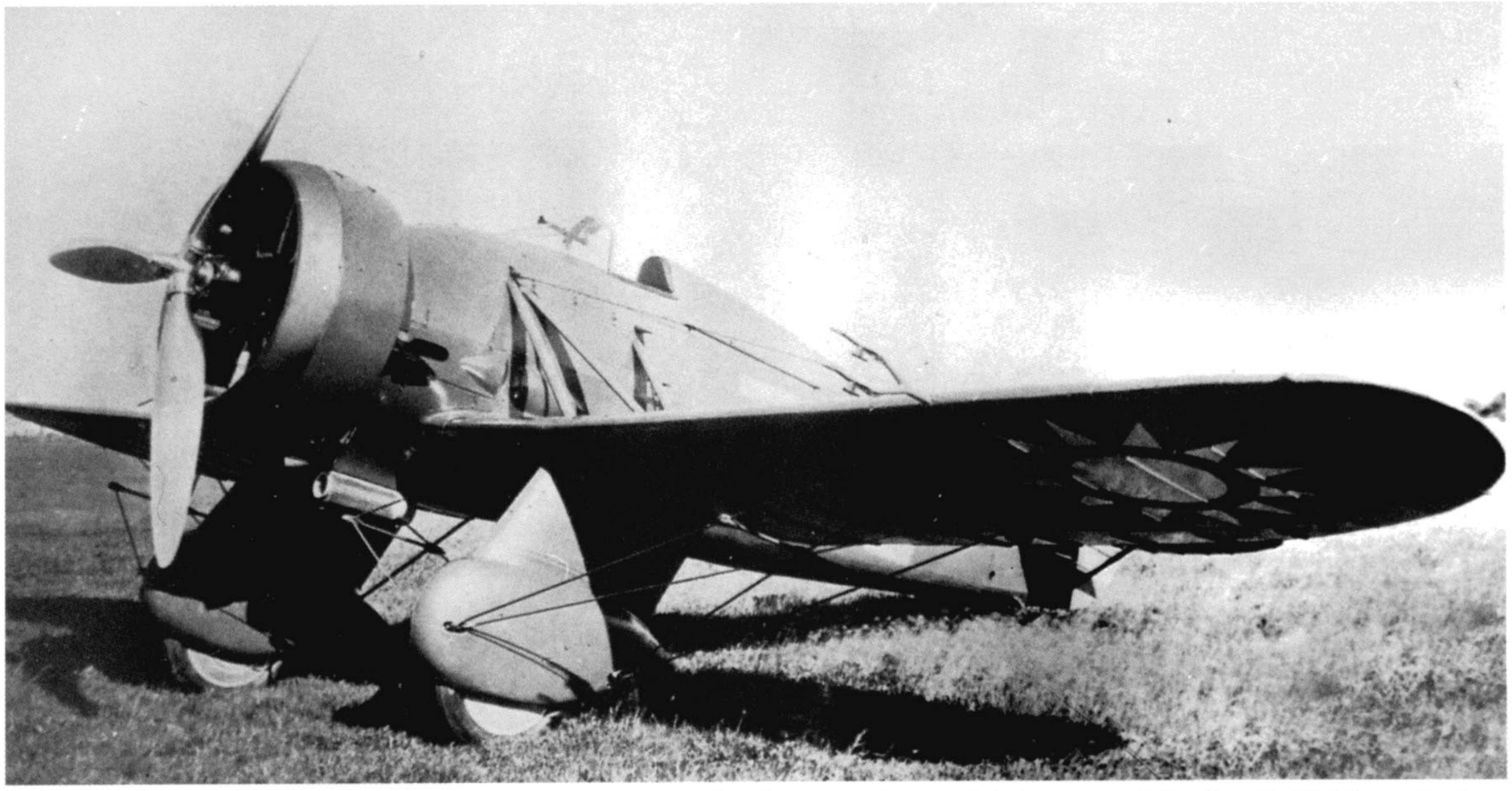
In addition to the request for American assistance China turned to Italy for help to build up its aviation assets. Chinese officers not needed in the "bandit" suppression campaigns had been sent to Hangchow for refresher courses and a large percentage had been found not able to fly and had been eliminated. Those who lost their positions became very much "anti-Jouett" and the American Military Attaché wrote about the Central Aviation School, that "people who have been in close contact with the local politics for years believe that the new [American] plan cannot possibly succeed". Finance Minister T V Soong, who had backed the American Mission, resigned on 26 October 1933 and was replaced by H H Kung. It was he who arranged the Italian Mission and later had bombardment instruction moved away from Chien Chiao to Nanchang.

Contrary to the American mission, which was not an official undertaking, the Italian Air Mission was sent out by the Italian

19 According to some publications there were only nine aircraft.



Caproni 111. Six of these bombers were ordered.



A total of 18 Breda Ba 27 fighters were ordered but only half that number were finally delivered.

Government. The first two Italian officers, Colonels Roberto Lordi (pilot) and Nicolo Galante (engineer), arrived in September 1933. Lordi, who was the first head of the mission, was replaced by Colonel Silvio Scaroni in August 1935. The Italians were initially sent to Hangchow, but in March 1934 they were transferred to Nanchang to start a new flying school. Some of the aircraft of the Central Aviation School were moved there and Lordi requested through the Italian Minister to China that the Italian Government sell 20 Breda Ba 25 trainers to China. Between 1934 and 1937 the average strength of the mission was about 15 officers. It was soon decided to use the Italian Air Mission to conduct a school for bombardment aviation, and Loyang was chosen as the base for this establishment.

A Chinese Air Mission was sent to Italy in July 1934 and 20 Chinese airmen were sent for finishing courses at Italian aviation schools. Colonel Lordi, who was appointed Chief Foreign Air Adviser, to all intents and purposes functioned as Chief of the Air Staff and, as such, had executive powers over the CAF.

Italian Lieutenant Valentino Cuss arrived with a Fiat CR 30 single-seat fighter, which was assembled at Hangchow in June 1933 and demonstrated. It remained at Hangchow and was probably purchased for the CAF, but was rarely flown. By November a three-engine Caproni Ca 101 bomber monoplane had arrived for demonstrations and a special aerobatic Caproni Ca 113 two-seat training biplane arrived in December. It was later demonstrated by Lieutenant-Colonel Mario Bernardi in Shanghai and Nanking. Bernardi arrived on 6 January 1934 as a representative of the Caproni factory and other Italian interests and he brought with him a pilot, a mechanic and four instructors.

Civil War in Kiangsi and Fukien

Fighting with the Chinese Red Army in Kiangsi continued in the form of a fourth campaign that took place between June 1932 and April 1933. Aircraft played a prominent part in the Nationalist Government drives against the Communists and the 3rd and 4th Squadrons now took part. The final campaign, which started in April 1934, ended in October the same year with the beginning of the epic "Long March". The Nanchang aerodrome initially had only one hangar, but more structures had been completed to allow the operations to increase and by the end of November 1933 six Fiat bombers and 15 Douglas O-2MCs and Corsairs were stationed there. Additional landing grounds had been established but all missions were carried out from Nanchang. Eventually five squadrons, the 1st to 5th, were employed in this campaign.

On 21 November Chiang Kai-shek ordered a general campaign against the 19th Route Army and the so-called Fukien Rebellion. In the morning of 1 December 1933 bombs were loaded on Fiats for operations in Fukien and a mass meeting in Chuanchow was allegedly bombed. About 4 December 1933 the CAF bombed Shahsien, Changchow, Yenping and Chuanchow in Fukien. Troops were concentrated on the Fukien borders and on 17 December the fighting started. During the first days of January an aerodrome was established at Chengho and General Mao Pang-chu went there with a number of Corsairs and Douglas O-2MCs. The Fiat bomber squadron at Nanchang was operating from that aerodrome.

Yenping was the first point to be taken. Observation missions were performed on 4th and 5th January and on 7 January the attack on this city started. Six Fiats from Nanchang participated in the aerial attacks, each carrying six 250-lb bombs. About 10 Corsairs and Douglas O-2MCs carried two 120-lb bombs each. Direct hits were scored on the walls of the city with 120-lb bombs dropped from 1,500 ft and this was followed up with the 250-lb bombs dropped from the Fiats. An observation machine directed the artillery fire. When the wall had been partly demolished and the defenders demoralised, a signal was given from the observation aircraft for the infantry to attack. The city was taken and all participating pilots and observers were given a cash bonus by Chiang Kai-shek.

Kutien was the next city scheduled for capture. On 12 January the Fiats of the 1st Bombardment Squadron at

Curtiss Hawk. The first 18 fighters of this type were delivered in 1933.

Nanchang were sent out to attack this city, but as the enemy had evacuated, it was decided to attack Shuikow instead, which was soon captured. On 18 January six Fiat bombers (with six 500-lb and 18 250-lb bombs) and 12 Corsairs and Douglas O-2MCs (with a few 125-lb and many 35-lb bombs) again assisted the ground troops[20].

When Nanking troops entered Fuchow on 17 January 1934 the leaders of the rebellion fled to Hong Kong and on 22 January the Revolutionary People's Army of Fukien capitulated. A new Governor was appointed and the former 19th Route Army was re-organised. The rapid and successful suppression of the Fukien Revolt was attributed largely to the effective employment of the CAF. "The Central Government air force has been developed to a point that many foreigners thought impossible even with foreign advice and assistance", an American officer reported.

Graduation ceremonies for about 100 pilots, 30 observers and 50 mechanics from the first Chien Chiao classes took place on 1 February 1934. Chiang Kai-shek and Chang Hüeh-liang both attended. At that time General Mao Pang-ch'u was still Commander of the school, Colonel Shen Tehsieh was Chief of the training section and Jouett was Director. One of the ten Chinese instructors was Major Hu Chia-mei, who was killed in an aircraft collision over the school's airfield on 4 June 1934.

A second class of 112 students had been enrolled in September 1933. By February 1934 the school's aircraft inventory was quite diversified: 28 Fleets, 12 Douglas O-2MC4s, 18 Hawks, 18 Fiats, 15 "old" Douglas O-2MCs/ O-2MC2s, 10 Corsairs, 10 Moths, two AW 16s, a Fiat CR 30 and a Caproni 101. There were four hangars at Chien Chiao, two 80 x 120 ft, one 150 x 300 ft and one 120 x 150 ft, plus one more under construction. There were two subsidiary airfields[21]. General Chou Chih-jou replaced Mao Pang-ch'u as Commandant of the Central Aviation School on 18 April 1934 and by the summer of that year all primary instruction was conducted by Chinese instructors, while basic instruction was the responsibility of the American pilots, assisted by four Chinese instructors.

Immediately after the suppression of the Fukien Rebellion the Nanking Government established new air units. In March 1934 their equipment and personnel were as follows:

1st Bombardment Squadron, Nanchang. 11 Fiats and Corsairs, 17 pilots, a few 100 to 500 lb bombs, limited supply of 38.5-lb fragmentation bombs (manufactured by the Nanking Arsenal), machine guns.

2nd Bombardment Squadron, Nanking. 7 Fiats, 12 pilots, same armament as above.

1st Observation Squadron, Lanchow (Kansu), 2 Douglas and 3 Corsairs, to get new Corsairs when they arrive, 14 pilots, machine guns and 38.5-lb bombs.

2nd Observation Squadron, Nanchang, 8 Douglas

20 The American intelligence officer who passed on this information remarked it might not be the whole truth, as it contained nothing about any bombing of buildings and cities.

21 Later on three auxiliary airfields were used.

An example of the Vought V-65-C New Corsair.

O-2MC (1930 model), 16 pilots, machine guns and limited supply of fragmentation bombs.

1st Pursuit Squadron, Hangchow, 15 Hawks, 17 pilots, machine guns.

The headquarters of the Aviation Bureau (Bureau of Aeronautics), still headed by General Hsu Pei-ken, moved from Hangchow to Nanchang in April 1934 and was reorganised into the National Commission on Aeronautical Affairs (Chung Kuo Hang K'ung Wei Yüan Hui) with Chiang Kai-shek as chairman.

New Aircraft Arrive

A batch of 20 Vought V-92C Corsairs with interchangeable wheel and float undercarriage was ordered on 7 April 1934 and was to be shipped from New York during the period May-July 1934. In the early months of 1934 the Central Aviation School received five new Fleets and another batch of 30 Fleet trainers was ordered in February. L E Gale & Company reportedly sold five three-seat Waco aircraft to the Central Government on 18 January 1934[22]. One Waco MNF, a three-seat biplane, was exported from the USA to J A Barr, Shanghai, in 1934. As Barr was Chang Hsüeh-liang's private pilot this was probably the Waco MNF acquired second-hand in January 1934 by Chang Hsüeh-liang from L E Gale.

An Avro 631 Cadet two-seat trainer was taken to China by the FEACo for demonstrations and arrived in Hong Kong in January 1934. It was sold to the Commission on Aeronautical Affairs in July. A two-seat example of the armed Avro 637 Advanced Trainer was demonstrated by the FEACo at Hungjao on 24 July and was apparently later sold to the Commission on Aeronautical Affairs.

Late in 1933 the Nanking Government had ordered 24 Northrop 2E Gamma two-seat light bombers, which were shipped to China between February and September 1934. Some were equipped with dual controls and two had cameras and were arranged for the developing of negatives in the air. According to later information six were to be equipped with cameras and developing equipment, and 12 with dual controls. By May five Northrops had arrived at Chien Chiao. Flying Instructor Ellis Shannon of the Jouett mission taught the pilots of the 1st Bombardment Squadron to fly the new aircraft. The 2nd Squadron converted in April 1935. About September 1934 a contract was concluded for components and subassemblies for another 25 Northrop Gammas and these were shipped to China in 1935 and assembled by the new CAMCO factory at Chien Chiao.

Twelve Douglas O-2MC5s were ordered from Douglas representative Inter-Continent Aviation in February 1934 and delivered in the summer of 1934. Twenty of the O-2MC6 model were ordered for assembly at CAMCO. Jean Audinet, representing French aircraft companies in China since 1932, managed in 1933 to secure a French credit, which was used for the purchase in March 1934 of five two-seat Breguet 27 (Breguet 273) light bombers[23]. They were to be delivered in Shanghai in August. A further five were ordered on 22 June 1934. These aircraft were delivered in December 1934 and were assigned to the 13th Squadron.

In April 1934 an example of the Caproni Ca 111 single-engined bomber was demonstrated at Kuling in Kiangsi and at other places by Colonel Mario Bernardi. Two machines of this type had been shipped to China on SS "Comte Verdi" in January. One of them (the second?) was assembled at Hungjao and flown to Nanking on 8 July 1934 by Colonel Bernardi. It was given as a present from Mussolini to Chiang Kai-shek. In the meantime the Compagnia Italiana

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22 Not confirmed.

23 A Breguet 273, F-AKFM "Joe III" flown by Mlle Maryse Hilz, visited Shanghai and Nanking in February 1934 while on its way to Tokyo.

CAF Aircraft, February 1935

According to a British report, the CAF strength (deliveries) up to the end of February 1935 (and when the Italian aircraft had all arrived) was as follows: 24 Fiat BR 3s, one sample (gift) Fiat CR 30, one Caproni Ca 101, seven Caproni Ca 111s, nine Fiat CR 32s, nine Breda Ba 27s, six Savoia S 72s, 50 Hawks, 36 Northrops, 36 Douglas (an additional 18 on order, to be produced at the Hangchow factory), 50 Corsairs, 60 Fleets (an additional 30 were to be produced at Hangchow), 20 Breda Ba 25s, 10 Breguet 27s, two or three old Junkers fighters, one old Moth and one old Douglas.

Waco RNF. Almost nothing is known about the acquisition and service of this type in the CAF.

d'Estremo Oriente was negotiating orders with the Nanking Government for 12 Caproni Ca 111s, two Fiat CR 30s, 12 CR 32s and 12 CR 40s. For the time being, twenty Breda Ba 25 two-seat trainers were the only aircraft ordered, however. They were delivered to Nanchang late 1934 or early 1935.

An example of the Curtiss BT-32 Condor, a twin-engined bomber-transport, was shipped to China and shown off at Nanchang by company pilot Frank Hawks. It was damaged on 17 April but after repairs it was sold to the Government in September 1934. It was intended as a personal transport for Chiang Kai-shek. It was finally destroyed by fire at Hungjao in April 1936. An example of another transport aircraft, the twin-engined Boeing 247D, was ordered in 1934 for personal use by Chang Hsüeh-liang. Fitted out as an executive aircraft with VIP interior it was shipped in November and arrived in the following month. It was named "Bai Ying" (White Eagle) and was flown by Julius Barr, Chang Hsüeh-liang's personal pilot. In April 1936 it was taken over by Chiang Kai-shek.

The Hunan Provincial Government at Changsha had donated two Vought Corsairs to the Nanking Air Force in 1932 and when the Hunan Aviation Bureau was abolished in August 1934 its seven remaining aircraft were handed over to the Central Government. Seven DH 60 Moths, two Ryan B-5 Broughams, two Fairchild KR-34s and one unknown type were reported to be present at Changsha in December 1933.

Most aircraft were imported from other countries, but in 1934 the Capital Aero Factory in Nanking built a two-seat biplane, similar to the Douglas O-2MC, which was completed in June. It was initially named "Batavia Overseas Chinese", but this was later changed to "Java".

Expansion Plans

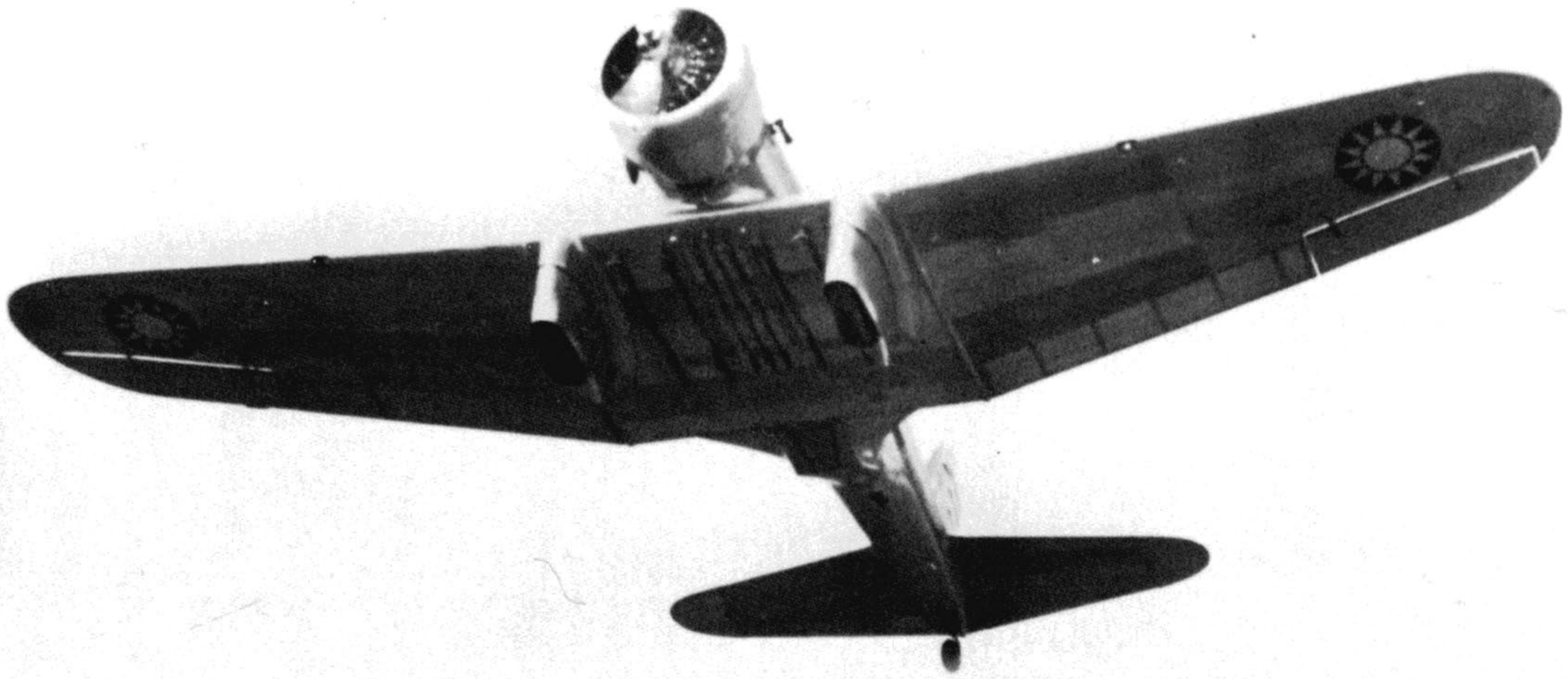
A defence plan for the expansion of the CAF, submitted by Jouett on 27 July 1934 and approved by Chiang Kai-shek, was adopted by the Commission on Aeronautical Affairs. It was to be gradually carried out and included the construction of advance, first line, intermediate and base airfields, and of air depots. The arrangement and location of this airbase system was clearly orientated to the east and north-east, that is, against Japan. The air force was to have a total of 435 aircraft, including 120 bombers (four groups of three squadrons with 10 aircraft each), 180 fighters (four groups of three squadrons with 15 aircraft each) and 135 observation aircraft (three groups of three squadrons with 15 aircraft each).

The war zones mentioned in the plan were laid out as circle segments with the centre on the CAF headquarters at Nanchang. Zone I included Honan and Shansi in the north-west and Zone III reach as far as Chekiang in the east. The southern zones IV (Fukien and Kwangtung) and V were not included in the plan and were probably the responsibility of the Kwangtung and Kwangsi Governments.

The Italian Air Mission

The Italian Air Mission was transferred from Hangchow to Nanchang in March 1934 and it established a Bombardment School in April with about 60 students. Its policy was to train flying personnel and specialists, to help organise air force administration and to develop the air force infrastructure, aerodromes, etc. It consisted of Colonel Roberto Lordi (Head of Mission), Major Napoli, who became head of the flying school, and flying instructors Martini and Cigerza. Instructors Accardo, Aramu, Palmentola and Torelli joined in May-June 1934, Zotti in August and Grasso in October 1934.

On 30 August 1934 the first bombardment course under Captains Accardo and Aramu graduated at Nanchang and a second course started on 15 September. Captain Zotti was responsible for the training of fighter pilots and Captain Unia, who arrived in January 1936, became chief instructor for an observation course in Nanking in March the same



Northrop 2E Gamma. Almost 50 of this light bomber were delivered to the CAF in 1934.

year. Major Marco Boschi was to become responsible for a technical reorganisation of the CAF. Captain Renato Benadusi was assigned as engineering adviser to Nanchang and Captain Giorgio Cavalca in the same capacity to Nanking. On 15 October 1934 a primary flying training school under Captains Torelli and Martini started at Nanchang.

Twenty-five Chinese engineers were sent to the Italian Politecnico di Torino in July 1934 to study aviation and 30 technical officers went to Italy for courses as well. One studied at the Accademia Aeronautica di Caserta. The Italian-run school was transferred to Loyang in February 1935

By 1 December 1934 flying activities at Nanchang were intensive. The old aerodrome just east of the city had been enlarged and additional hangars were being built to house all the aircraft gathered on the aerodrome. A new field was under construction 3.5 miles south of the old aerodrome and some 20-30,000 coolies were working there. Barracks, school buildings and hangars were being built. Nanchang was to become the new CAF centre, complete with headquarters, aviation school and an aircraft factory. Primary training was carried out on Fleet trainers and Douglas O-2s were used for blind and night flying training and there were about 150 cadets. Lordi had become Chief Foreign Adviser to the CAF and as a consequence Italian aircraft manufacturers were favoured for a period.

In March and August 1933 a number of Italian aircraft had been ordered: nine Breda Ba 27 single-seat fighter monoplanes, 13 Fiat CR 32 single-seat fighter biplanes, six Caproni Ca 111 single-engine bomber monoplanes and six Savoia-Marchetti S 72 three-engined bomber-transport monoplanes. By August 1934 a Chinese Air Mission under General Mao Pang-ch'u was in Rome to inspect the construction of these aircraft. It seems that ten Ba 25 trainers, five Ba 27s, five CR 32s and five S 72s had reached China by January 1935. Four of the S 72s arrived in the first quarter of 1936, were tested at Hungjao and then sent to Nanchang.

As already mentioned, aircraft had been used extensively in the anti-Communist campaign in Kiangsi and in the sup-

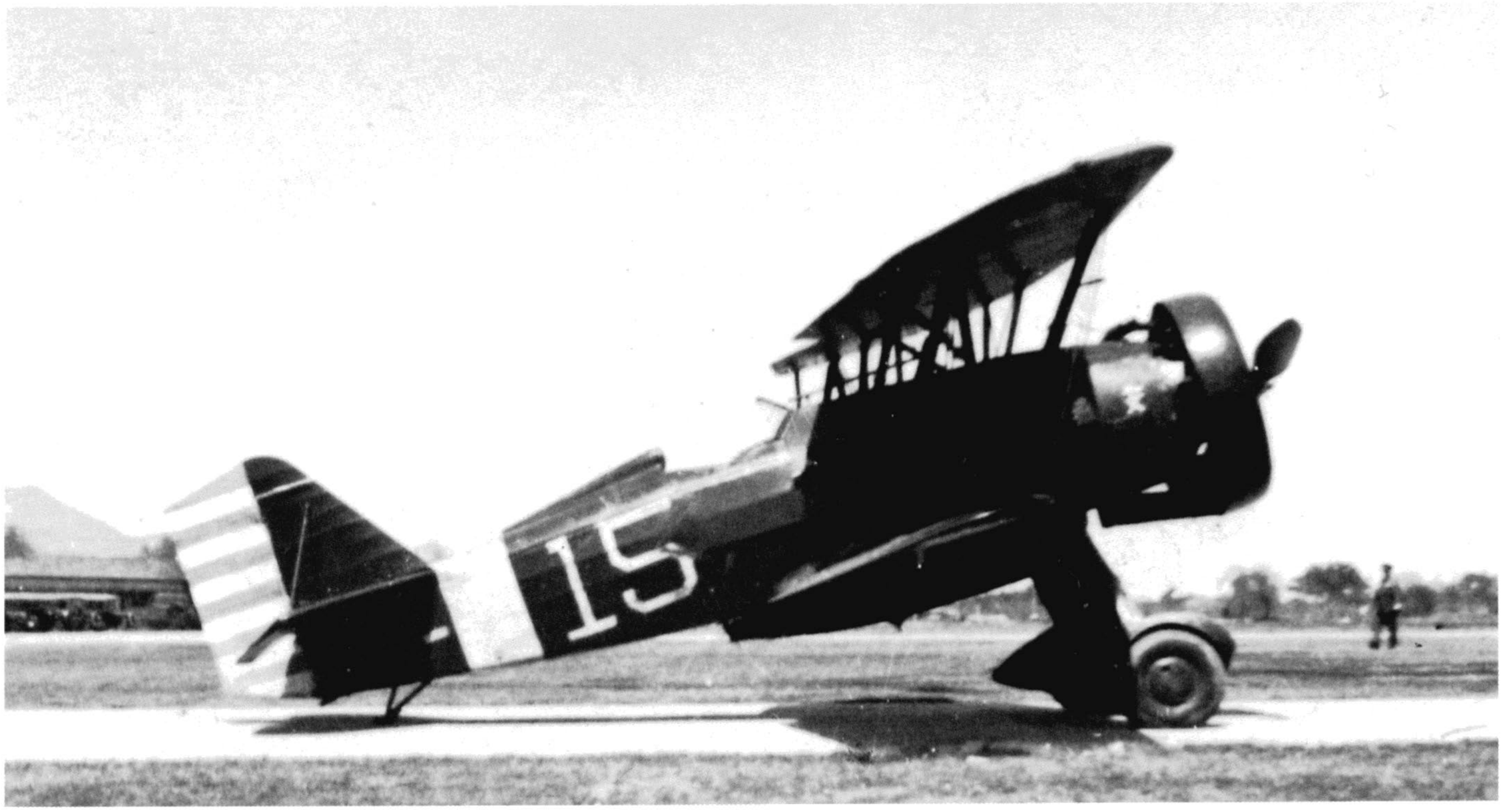
The Italian Mission to China

Personnel

Lordi, Roberto Colonello, adviser, head of mission, 1933-35
Scaroni, Silvio, Colonello, adviser, head of mission, 1935-37

Accardo, Ferdinando, Capitano, flying instructor, 1934-36
Aramu, Mario, Capitano, flying instructor, 1934-36
Cigerza, Enrico,Capitano, flying, navigation, etc instructor, pilot, 1934-37
Grasso flying, instructor, 1934-36
Martini, Francesco, Capitano, flying instructor, 1934-37
Napoli, Vincenzo, Maggiore, head of aviation school, 1934-35
Palmentola, Gino, Capitano flying instructor, adviser 1934-36
Torelli, Felice, Capitano, head flying instructor, 1934-37
Zotti, Andrea, Capitano, flying instructor, 1934-36
Unia, Carlo, Capitano, flying instructor, 1936-37
Colacicchi, Raffaele, Capitano, flying instructor, 1937-37

Galante, Nicolo, Maggiore, adviser, engineer, 1933-34
Boschi, Marco, Maggiore, technical adviser, 1934-37
Benadusi, Renato, Capitano, adviser repairs, 1934-37
Cavalca, Giorgio, Capitano, adviser repairs, 1934-37
Curra, Sergente, mechanic, adviser, 1934-37
Leone, Francesco, Maggiore, admin adviser, 1934-36
Nava, Maresciallo, mechanic, 1934-37
Sala, Sergente, armament instructor, 1934-37
Salussolia, Mario Sergente, mechanic, 1935-37
Bisol, Mario, Sergente, radio engineer, 1935-37
Columba, Domenico, Capitano, technical adviser, 1937-37
Stajano, Frederico, administration adviser, 1937-37
Tolino, Umberto, Maggiore, technical adviser, 1937-37



One of the first 18 Curtiss Hawk fighters supplied to the Chinese Air Force in 1933.

pression of the Fukien rebellion. In October 1934 the 2nd and 3rd Squadrons were stationed at Hengyang, chasing the Communists in support of the so-called Pursuit Army (ex-6th Route Army). The number of squadrons was expanded to nine: the 1st and 2nd (bombardment), 3rd, 4th and 5th (reconnaissance and bombardment), 6th (reconnaissance), 7th and 8th (pursuit), and the Aviation Instruction General Squadron, which had been created in 1933.

New Aircraft

New aircraft delivered in 1935 included the batch of 20 Vought V-92C Corsairs and the 22 Douglas O-2MC6s that were assembled by CAMCO at Hangchow. On 11 December 1934 an order for 30 additional Fleet 10 trainers had been signed. All the 35 machines acquired earlier had been built by Consolidated in the USA, but the new aircraft were to be produced by Fleet Aircraft of Canada. They were called Model 10Bs, but were equivalent to the US Model 10. Parts and material for another 20 Model 10Bs were ordered at the same time for assembly in Shanghai. The aircraft and materials were shipped in May 1935. A Cierva C.30A (Avro 671) autogyro was acquired for evaluation at Nanchang in the autumn of 1935. It had been demonstrated by FEACo pilot A D Bennett before a large number of spectators at Lunghua on 21 June 1935 and later at Hankow and seems to have aroused considerable interest.

In September 1934 Junkers Ju 52/3m D-ABAN arrived in Canton and later continued to Shanghai and in November this three-engined passenger transport was offered for sale to T V Soong. Junkers also offered to deliver six examples of the K 45, the dedicated bomber version of the Ju 52/3m. This proposal was rejected, however, as negotiations over a factory for licence production of other Junkers types were already under way. The Ju 52/3m remained in Shanghai and was purchased by the Nanking Government in April 1935 for Chiang Kai-shek's personal transport unit.

The nine Breda Ba 27M fighters were used by the 7th Squadron and the 13 Fiat CR 32s were issued to the 8th Squadron. Pilots for the Italian fighters were trained by Captain Zotti. It seems that an additional three CR 32s were delivered as attrition replacements later. Six Caproni Ca 111RCs and six Savoia S 72s were assigned to the 9th and 10th Squadrons of the 8th Bombardment Group at Nanchang, respectively, but they were mostly used as troop transports. S 72 pilots were trained by Captain Torelli.[24]

An additional S 72, registered I-ABMO, was sent as a gift from Mussolini to Chiang Kai-shek and was flown to China by Colonel Scaroni and Captain Angelo Tondi. It flew from Rome on 6 July 1934 and arrived in Hong Kong on the 28th. It continued to Shanghai and Nanchang in the following month and was handed over at Chengtu in mid-August. Enrico Cigerza was detailed to fly this aircraft as Chiang Kai-shek's personal pilot[25].

CAF Exercises and Organisation

On 29 November 1934 six CAF aircraft from the Central Aviation School delivered a mock bombardment on the

24 According to an (undated) French report the Italian types were quickly "used up". Six of 12 (sic) Fiat CR 32s, five of nine Breda Ba 27s, four of six Caproni Ca 111s, four of six Savoia S 72s and 11 of 18 (sic) Breda trainers had crashed.

25 Chiang's S 72 was destroyed during a Japanese air raid in August 1937.

The Douglas O-2MC2. Twenty of this version were delivered to China in 1931.

Hangchow railway station and on the night of 4 December Shanghai South station was "bombarded" in a similar manner. Both exercises were co-ordinated with extensive campaigns and drills to teach the people of these cities how to take necessary precautions in the event of a real air raid.

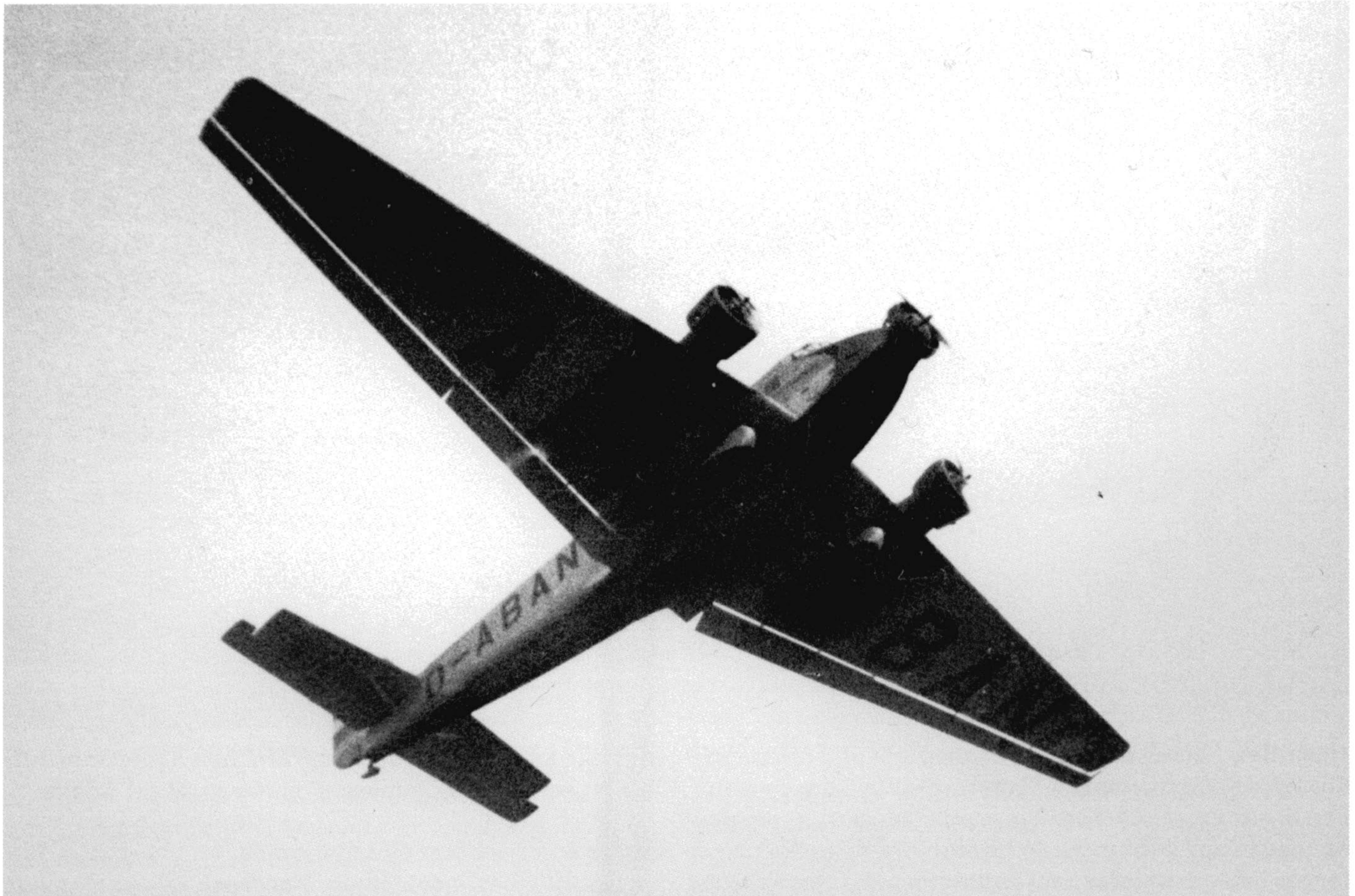
Existing CAF squadrons were moved around constantly. In mid-February 1935 the 5th Squadron moved to Kweiyang. Early in May 1935 the 3rd and 4th Squadrons moved from Kweiyang to Kunming and in mid-June 1935 the 3rd and 5th Squadrons moved to Chengtu, Yaan and Yungching airfields. The first CAF aircraft arrived at Yünnanfu (Kunming) from Kweiyang on 27 April to assist in one of the anti-Communist campaigns. Soon three V-92C Corsairs, three Douglas O-2MCs, a three-engined Caproni 101, which was used to transport bombs into the city, a Sikorsky S-38 and a Junkers Ju 52/3m had arrived. The Caproni was flown by an Italian pilot named Fontana.

By June 1935 the CAF Order of Battle included six groups made up of eleven squadrons. The groups were nominally to have three squadrons each. Light bomber squadrons had 10 aircraft each, heavy bomber squadrons six, and observation and pursuit squadrons 15. General Chan Hing-wan was Chairman of the Commission on Aeronautical Affairs.

1st Bombardment Group, Loyang
2nd Bombardment Group, Nanchang
1st Observation Group, Lanchow and Tienshui
2nd Observation Group, Nanchang
1st Pursuit Group, Nanking and Hangchow
Training Group (pursuit, bombardment and observation), Hangchow

The contract with the American Air Mission under Jouett

Vought O2U-1D Corsair.



Junkers Ju 52/3m D-ABAN was purchased for Chiang Kai-shek's VIP unit. It flew for some time with dual German registration and Chinese national insignia.

was to expire 1 July 1935. The Central Aviation School at Hangchow was still commanded by General Chou Chih-jou and offered refresher, primary, basic, advanced, observer, engineering and medical courses. From the later classes 65 students had graduated in June 1934, 64 in December 1934 and 56 in June 1935. Another 98 were to graduate in De-

One of the six Caproni Ca 111 bombers that were received for 9th Squadron in 1935.

The Curtiss-Wright BT-32 Condor bomber-transport.

cember 1935 and 160 in June 1936. On 23 April 1935 the school's aircraft inventory included 40 Fleets, 10 Northrops, 11 V-65 Corsairs and 22 Douglas O-2MCs. At Hangchow were also 10 Curtiss Hawks of the 5th Squadron. When Jouett's contract expired, he left Shanghai for the USA on 11 June 1935, and at that time there were still eight American instructors at Hangchow, but by August only one American officer[26] and two mechanics remained.

Loyang Flying School

Construction of a new Flying Training School at Loyang was started in November 1934 and was planned to be ready in one year. It was situated at a new airfield, immediately to the east of the old field, 1 mile west of Loyang city, which had been laid out between the main road and the Loyang-Sian railway. The school buildings and the Loyang Military Academy buildings were on the opposite side of the road. There were five old hangars and four new were being built. Colonel Huang Kuang-jui (the Commander of the Canton Air Force) was appointed Commanding Officer and the Italian instructors were transferred from Nanchang in February-March 1935.

The school was to have an elementary flying training course and a bombardment course. By April 1935, when the school opened, it had 17 Fleets and an additional 18 were just arriving from Nanchang. The first class of 86 students was to begin on 1 June. Major Napoli was in charge and Captains Torelli and Zotti assisted him. General Lordi was still stationed at Nanchang, however.

By November 1935 there were 250 cadets and the following aircraft were based at Loyang: 30 Fleets, 19 Breda

26 Roy Holbrook accepted a two-year contract as adviser and was still employed as flying instructor in the CAF by July 1937. He arranged for the arrival in August 1936 of American instructors John Holland (mechanic), William McDonald (pursuit), Sebie Smith (mechanic), Stirling Tatum (bombardment), Ralfe Watson (armament, mechanic) and John Williamson (pursuit).

The Fleet trainers were used both at Chien Ciao and Loyang and at other aviation schools.

The first Curtiss Hawk III fighters with retractable undercarriage were delivered in 1936.

Ba 25s, 2 Vought Corsairs, 2 Junkers K 47s, 2 AW 16s and five Douglas O-2MC4s. Preliminary training was carried out on the Fleet, basic training on the Breda, and advanced flying in any of the other types used at the school. In May 1936 the staff of instructors was reduced to six as a result of the recall of Italian officers stationed in Nanking and Nanchang because of the Italian attack on Ethiopia. All Italian instructors were removed from Loyang in July and those, whose contracts had not expired, were transferred to Nanchang. The activities of the Italian Air Mission received a further check as a result of the rapprochement between Italy and Japan.

By October 1936 Colonel Huang Kuang-jui was still commanding the Loyang school. Colonels Huang Yu-p'ei and Chang Ting-meng, and Lieutenant-Colonels Yen Yu-tsung and Ching Shih-chung were Chief Instructors. The school received 18 new Breda Ba 28 trainers from Italy to supplement the worn out Ba 25s, but at the beginning of November 1937 Italian Foreign Minister Esteri Ciano ordered to stop deliveries of material to China and on 4 December the Italian Mission was ordered to leave. The Italians were repatriated on 10 December, left for Hong Kong and finally sailed on board the "Vittoria" on 19 December 1937.

Early in 1936 the Aeronautical Affairs Commission was moved from Nanchang to Nanking, where it was established on an equal footing with the Military Affairs Commission and the Admiralty. In March 1936 General Chou Chih-jou was appointed Head of the Commission in place of General Ch'en Ching-yun.

After the exodus of the Italians aircraft, orders were again placed in the USA. A single Douglas O-2MC10 was delivered in 1936, probably as a pattern aircraft for production at CAMCO. One source states that CAMCO production during the July 1936-July 1937 period included 68 O-2MCs. Two Ford Tri-Motor transport monoplanes were acquired second-hand for the Central Aviation School and arrived in April 1936 and a single Douglas DC-2 was sold to the Nanking Government (Dr Kung) on 27 June 1936. It was fitted out with luxury VIP interior and was intended for Chiang Kai-shek's growing fleet of VIP aircraft. It was called the "The Flying Palace".

A total of 72 Curtiss Hawk III single-seat fighters were shipped from the USA starting in March 1936. This included both demonstration and pattern aircraft and sets of parts, some of which had originally been ordered by the Canton Government. Another 30 were ordered in 1937. The first machine assembled at the Shiukwan Aircraft Factory in Kwangtung was tested on 1 June 1937 and this factory allegedly completed 16 Hawk IIIs in 1937, 22 in 1938 and six in 1939, possibly including some built from scratch. The others were completed by CAMCO. A batch of 20 Shrike two-seat ground attack monoplanes was ordered from Curtiss and these aircraft were shipped in May 1936 and erected by CAMCO as well.

Take-Over of the Canton Air Force

The final showdown between Canton leader General Ch'en Chi-t'ang and Chiang Kai-shek took place in July 1936. Ch'en started a campaign against Nanking, but it collapsed almost immediately. On 18 July, 136 Canton aviators defected to Nanking in 72 aircraft led by Air Force Chief Huang Kuang-jui and not a single machine in good condition was left at Canton. Forty-five of the 58 aircraft that had landed at Shiukwan flew to Nanchang on 20 July to be reviewed by Chiang Kai-shek. Thirteen were to remain at Shiukwan in case General Yü Han-mou, who was

advancing to Canton, would need them. On 18 July Ch'en decided to retire and the so-called South-West Political Council and South-West Executive Committee ceased functioning. Nanking troops arrived in Canton on 20 July and this ended Kwangtung independence for good. The Kwangtung Army became the 5th Route Army of the National forces.

Over 1,100 Canton air students and air force officers were transferred by order of Chiang Kai-shek to the Central Aviation School and left by steamer for Nanking on their way to Hangchow on 17 August. As already mentioned, former Canton Air Force Commander Huang Kuang-jui was head of the school since 1935. The reorganised Canton Air Force was placed under the command of General Chen Hing-wan, who was appointed Commander-in-Chief of the "1st Route National Aviation Service" by the Central Government in August. On 22 December the 3rd Squadron with some 24 aircraft flew to Loyang, which left only nine aircraft at Shoukouling, Canton. Australian Garnet Malley, who had been employed as adviser in Canton, joined the Commission on Aeronautical Affairs in November 1936. On 19 April 1937 Colonel Chen Hsing-yun, Commandant of the CAF at Canton, left for Hangchow to become Superintendent of the Central Aviation School in succession to Huang Kuang-jui.

In order to assemble and deliver 30 Curtiss Hawk III single-seat fighters and 30 Vultee V-11 single-engine bombers that had been ordered by the Canton Government in April 1936, the American firm Inter-Continent took over the Shiukwan Aircraft Works. One V-11-A was completed in the USA in December 1936, and the parts for 29 V-11-Gs were shipped between July 1937 and April 1938.

Aircraft taken over from the Canton Air Force included ten Boeing 281 fighters, four Armstrong-Witworth Atlases, 14 Avro Avians and "Avro Trainers", at least four Waco CSOs, three Stinson Model Os, five Pitcairn PA-6 Mailwings, three Stearman Bulls, two Northrop Alphas, three Ryan Broughams, an Arrow Sport, two Travel Airs, a Douglas DC-2 and a locally built Fu-Hsing. Another 19 examples of the Fu-hsing two-seat high-wing trainer were built for the CAF between 1936 and 1941. Nine Focke-Wulf FW 44F Stieglitz two-seat trainers were taken over as well.

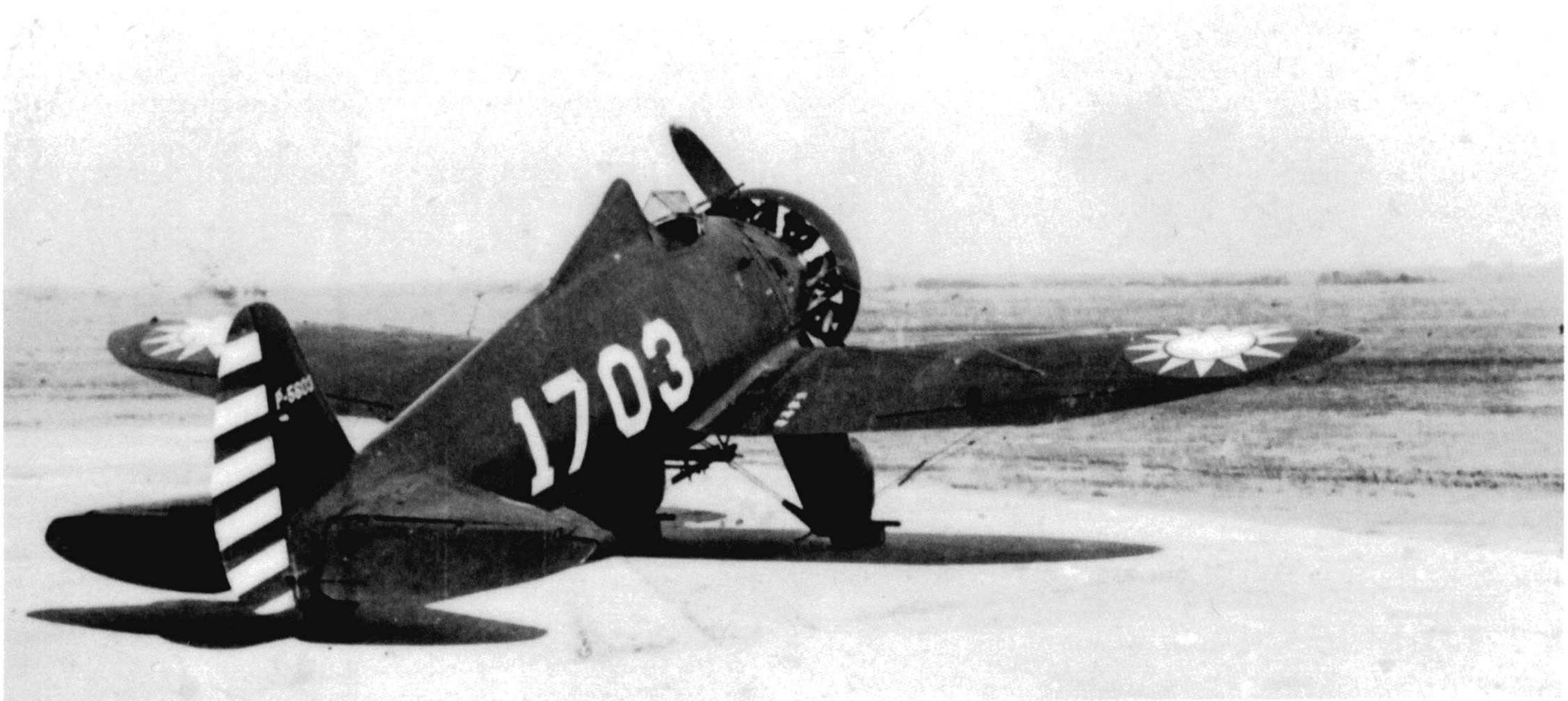
The Canton Government had ordered a number of German aircraft from F Feld & Company in September 1935 and six Heinkel He 111A twin-engine bombers arrived with seven German pilots and two mechanics in August 1936. One Focke-Wulf FW 58K-3 Weihe, a twin-engined general-purpose monoplane, was shipped in October 1936[27] and a new batch of three FW 44Fs and seven FW 44Js delivered in 1936 had originally been ordered by Canton as well. After payment had been received, the first four Heinkel bombers were handed over to the Commission on Aeronautical Affairs late in October and the remaining two followed at the end of November[28].

The Survey Bureau (Aero Survey)

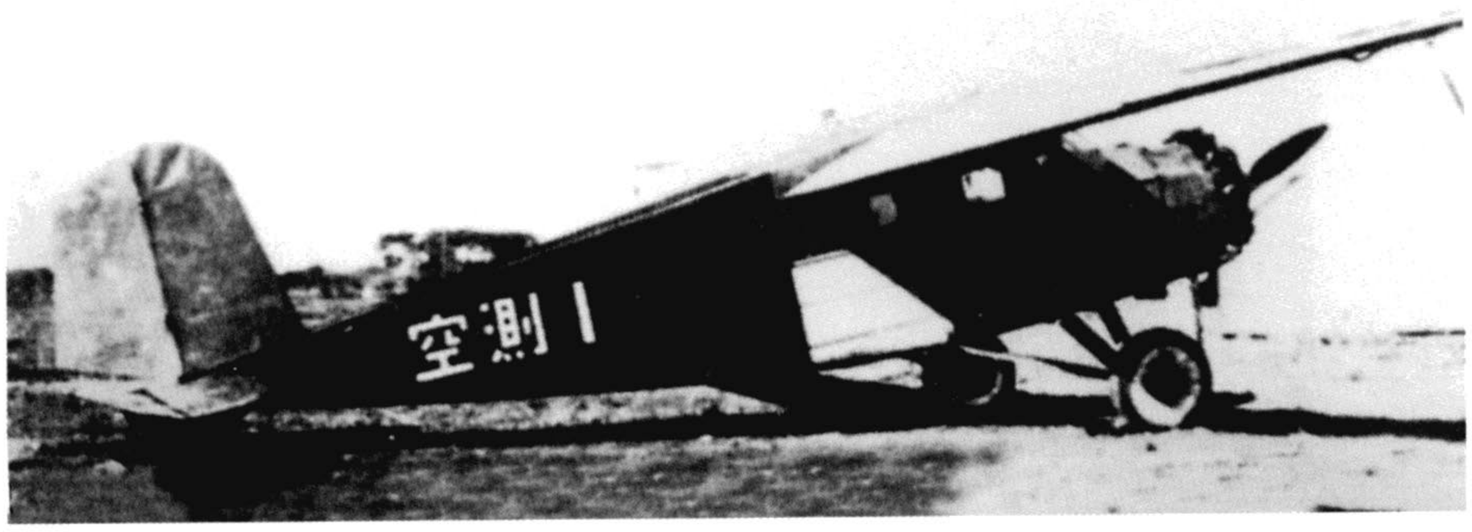
In 1930 a Survey Bureau was established by the Nanking Government. It was organised within the General Staff, which was responsible for land survey. A Chinese General was appointed chief and a Swiss engineer named Wahlen, a Wild Company camera specialist, was engaged as instructor. The head of the Survey Bureau made a tour to Europe in

27 On 16 June 1938 the German Wirtschaftsgruppe Luftfahrtindustrie sent the following telegram: "Please decide regarding our Mukden telegram first FW 58 Peking Carlowitz". Unfortunately nothing more is known about the Chinese FW 58 order.

28An order for 12 Heinkel He 66 dive-bombers was possibly placed by China (Canton?). Some publications maintain that 12 He 66s were delivered to China in July 1934. Now evidence has been found to support this, however. The He 50, on which the He 66 was based, did in fact not go into production until in 1935. It seems quite certain that no aircraft of this type were ever delivered to China.



Among the aircraft taken over from the Canton Air Force were ten Boeing 281 fighters. This example belonged to 17th Squadron, October 1936. (Wings of China)



The BFW M 18 that was used for photographic survey. It was first marked "K'ung-tse" (Aero Survey) No 1.

the autumn of 1930 and the acquisition of a Junkers W 33 was discussed during a visit to Junkers at Dessau.

At Hangchow the Chekiang Conservancy Board, which was headed by En Ki-dai, decided to organise a survey department, called Aero Survey, and ordered a German BFW M 18d cabin monoplane equipped for aerial photography. It was shipped on 27 July 1930 and after delivery to Hangchow in the autumn it was marked "K'ung-tse" (Aero Survey) No 1. German pilot Heinrich Hartmann was engaged for three years to fly it together with camera operator and adviser Hans Ruef. Aero Survey was transferred to Nanking in the summer of 1931 and taken over by the Survey Bureau and Ruef became chief adviser to that office. German engineers Balk and Neumaier were engaged as aerial surveying advisers in 1932 and stayed in China until 1936/37.

At least two Junkers W 33s and two Ryans were transferred from the Air Force to Aero Survey and in 1934 the Shansi Provincial Government ordered a Junkers W 34 equipped for photography. It was built by AB Flygindustri in Sweden and was shipped to China in November 1934. A second W 34 was ordered and paid for by the Ministry of Railways and there were plans to order two more, one by the Military Affairs Commission and one by the Kiangsu Government.

All aircraft were marked with the words "Tse-liang" (Aero Survey) and a number. The first W 34, which had arrived in Nanking in January 1935, crashed at Hankow already in March so Junkers was asked to reserve a new W 34 for China, but for the time being no further aircraft were ordered. The second W 34 was shipped from Sweden in January 1935.

Aero Survey was now headed by Li Ching-lu. In June 1935 a General Staff commission inspected Aero Survey and the Government was not satisfied with its findings. In any way a number of new German technicians arrived in October 1935 and in 1935-36 surveys were made in Nanking, Fukien, Kiangsi and Shensi for the Ministry of Railways and the National Economic Council. In January 1936 the National Economic Council decided to acquire new W 34s for Aero Survey and two examples were finally ordered. Both were delivered in 1937, one of them being handed over in September in Germany. The BFW M 18 was still in service in 1936 and a Spartan was acquired as well.

Aero Survey was dissolved on 1 June 1936, however, and was incorporated into the military Survey Department. By 22 October 1937 two Junkers W 34s remained in service and unfortunately nothing is known about their final fate.

CAF Reorganisation ...Again

Largely as a result of an adverse report made by General Silvio Scaroni, the functions of the Aeronautical Affairs Commission were completely revised in 1936. An Air Committee, directly responsible to the President of the Commission (Marshal Chiang Kai-shek), took over the direction and control of Air Force affairs. All decisions had to be submitted to the President before executive action was taken and proposals that could not be decided by the Committee were to be decided by the Secretary General, Madame Chiang Kai-shek. The two foreign advisors, General Scaroni and Squadron Leader Garnet Malley, were attached to the Commission and were to be present at all meetings of the Committee. In July 1936 American Colonel George Reinburg had arrived in China on a one-year contract as aviation adviser. He was ordered to the Central Aviation School at Hangchow to advise the Commandant on the re-organisation of that unit, but died suddenly in December.

Campaigns were launched to collect funds for the purchase of new aircraft during the autumn of 1936. Contributions were more or less compulsory, however, and as before, official ceremonies were staged when the aircraft were named and presented. Several such ceremonies were arranged at the occasion of Marshal Chiang Kai-shek's 50th birthday on 26 October 1936.

In the autumn of 1936 the CAF participated in operations in Inner Mongolia, centred on Changtu, a town on the Chahar frontier, east of Pailingmiao. Aided by Nanking aircraft, Chinese troops fighting "Manchoukuo and Mongol bandits" set out to recover lost districts from the

CAF, summer 1936

1st Squadron	Northrop 2E
2nd Squadron	Northrop 2E
3rd Squadron	Douglas O-2MC and Corsair
4th Squadron	Douglas O-2MC and Corsair
5th Squadron	Douglas O-2MC and Corsair
6th Squadron	Douglas O-2MC and Corsair
7th Squadron	Breda Ba 27
8th Squadron	Fiat CR 32
9th Squadron	Caproni Ca 101
10th Squadron	Savia S 72
11th Squadron	Northrop 2E
12th Squadron	Northrop 2E
13th Squadron	Breguet 27
14th Squadron	Fiat BR 3

pro-Japanese so-called Inner Mongolian Military Government (Nei-meng chün-cheng-fu) under Prince Teh. On 24 November Chinese troops from Shansi captured Pailingmiao and in December 1936 Prince Teh's army was defeated.

Chiang Kai-shek now intended to make an all-out effort to annihilate the Chinese Communists. Chang Hsüeh-liang was ordered to participate with his Manchurian troops, but he instead wanted to enlist the Red forces in the greater cause of resisting and repelling the Japanese. This led to the so-called "Sian Incident" during a meeting with the most prominent Chinese leaders December 1936. The local warlord and the Communists became involved in the issue and after a period of intensive discussions, which took place at Sian, civil war threatened. Chang Hsüeh-liang was eventually ordered to disband his troops and was replaced by another general.

At that point Chiang Kai-shek was taken prisoner by the local Shensi warlord, Yang Hu-chen. Both Chiang and Chang had flown into Sian, Chiang in a Ford Tri-Motor piloted by Ed Winegerter and Chang in his Boeing 247. Both leaders had since several years used aircraft for quick transportation around China. American Julius Barr had come to China as a company pilot for Boeing, but became Chang's personal pilot and flew his Boeing 247[29]. The following aircraft are known to have been used by the National Government VIP flight through the years: a Sikorsky S-38B, two Ford Tri-Motors, a Curtiss Condor, two Boeing 247s, a Caproni Ca 111, a Savoia S 72, a Junkers Ju 52/3m, two Douglas DC-2s and a Sikorsky S-43W. Besides Barr, Americans Hutton, Leonard, Smith and Winegerter, Italian Enrico Cigerza and German Eric Just (ex-CNAC) flew these aircraft.

Several flights were made with the Boeing to the Communists' headquarters at Fushi to deliver guns and ammunition and to bring Communist leaders to Sian for negotiations. T V Soong chartered a CNAC aircraft in Nanking and arrived to plead for his brother-in-law Chiang. He later flew back to Nanking to fetch Madame Chiang, arriving on 22 December in the German-crewed Junkers Ju 52/3m. The crisis was solved and two days later Chiang and his wife flew to Nanking in the Junkers and Leonard followed them with Chang and T V Soong in the Boeing.

In October 1936 Scaroni was called to Hangchow by Chiang to make a general inspection of all the CAF, which had by now been reorganised into a nine-group, 31-squadron structure.

Reorganisation in 1937

In January 1937 a decision was made to reduce the number of squadrons from 31 to 21, in order to bring the remaining squadrons to a state of efficiency for war and to enable them

29 About May 1936 the Boeing was put at the disposal of Chiang Kai-shek. Royal Leonard started to fly the Boeing for Chiang in April 1937, but it was destroyed during the first Japanese raid on Ichang in 1937. He later flew Chiang's DC-2 until this machine was destroyed at Chungking by a Japanese firebomb in 1938. A German named Stennes was in charge of the transport squadron.

CAF, October-November 1936

Air Group	*Established*
1st AG	Nanchang 1.11.36 (Northrop)
2nd AG	Kwangtak 15.10.36 (Northrop, Fiat BR 3, Vultee V-11 and Douglas O-2MC)
3rd AG	Chuyung on 16.10.36 (Hawk III, Fiat CR 32 and Boeing 281)
4th AG	Hangchow on 16.10.36 (Hawk III. To Taiyüan in 11.36)
5th AG	Chienchiao on 16.10.36 (Hawk III)
6th AG	Sian on 16.10.36 (Douglas O-2MC)
7th AG	Nanchang on 16.10.36 (O-2MC and "Chinese-built DH Moth")
8th AG	Nanchang on 29.10.36 (Savoia S 72, Ford Tri-Motor, Heinkel He 111 and Caproni Ca 101)
9th AG	Chienchiao on 16.8.36 (Curtiss Shrike)

Squadron	*Number of Aircraft*
1st	9 Northrop
2nd	9 Northrop
3rd	9 Douglas O-2MC
4th	9 Douglas O-2MC
5th	7 Corsair
6th	8 Corsair
7th	9 Hawk III
8th	7 Fiat CR 32
9th	9 Northrop
10th	6 Savoia S 72
11th	9 Northrop
12th	9 Corsair
13th	9 Douglas O-2MC
14th	10 Fiat BR 3
15th	9 Douglas O-2MC
16th	8 Corsair
17th	8 Boeing 281
18th	1 Corsair
19th	4 Heinkel He 111
20th	9 Douglas O-2MC
21st	9 Hawk III
22nd	9 Hawk III
23rd	8 Hawk III
24th	9 Hawk III
25th	9 Hawk III
26th	9 Shrike
27th	9 Shrike
28th	9 Hawk I
29th	0 (Hawk III)
30th	0
31st	6 Douglas O-2MC

Note: As the CAF did not have 53 Curtiss Hawk III in service by this time it is likely that some Hawk squadrons in fact had Hawk Is but were scheduled to convert to the Hawk III.

CAF Aircraft Inventory, 1 July 1937

American intelligence sources reported that the CAF had the following aircraft inventory as of 1 July 1937:

Five Breda Ba 27s, six Fiat CR 32s, ten Boeing 261s, six Junkers K 47s, 25 Hawk IIs, 72 Hawk IIIs (including 28 about 30% complete), 40 Northrop 2Es, 20 V-65C Corsairs, 20 V-92C Corsairs, 17 Douglas O-2MCs, 20 O-2MC5s, 65 O-2MC6s, 20 O-2MC10s, one Vultee V-11, 19 Curtiss Shrikes, one Ca 101, five Caproni Ca 111s, one Curtiss Condor, eight "Caproni CA-30s", eight Fiat BR 3s, three Savoia S 72s, six Heinkel He 111s, six Martin M-139Ws, eight Junkers bombers, 110 Fleet 10s, 14 Breda Ba 25s, 16 Focke-Wulf trainers and 15 Breguets used as trainers. The Junkers K 47s were being rebuilt at the Naval Aircraft Factory in Shanghai.

to maintain a suitable supply of reserve aircraft. The total number of available CAF pilots was 993, of which 775 were assigned to flying duties by 1 February. One Northrop, one Fiat BR 3, four Douglas (three bomber and one reconnaissance), one Corsair and three Hawk squadrons were to be disbanded. Initial squadron strength was to be nine aircraft, in twin-engine squadrons six. Immediate reserves were set at three and two aircraft, respectively[30].

Canton and Nanchang aerodromes were visited by British officers in January 1937 and by that time Lam Wai-shing was second in command at Canton. The following aircraft were observed at Shoukouling: the six recently acquired Heinkel He 111 bombers, the Douglas DC-2 that Canton purchased, which was now used by the 4th Route Army, a number of Hawk fighters, and a locally-built Fu-hsing, which was seldom flown. Only one pilot was qualified for the He 111 and there was a German engineer, who had erected the aircraft and instructed the personnel. Canton headquarters controlled all air units in Kwangtung, Hunan and Fukien, but the Kwangsi Air Force was still independent. One squadron with nine Hawks, one with six He 111s and one with nine Fu-hsings was said to be stationed in Canton.

At the old Nanchang aerodrome Northrop and Hawk aircraft were observed. There were also one Stinson Model O with towed target gear, about three old Breguets and three Douglas O-2MCs. On the new aerodrome were the 24th Squadron with Curtiss Hawks (including two Hawk Is), seven "twin-engine Savoias", and a lot of old aircraft, including Puss Moths, Moths, Douglas O-2MCs, Breguets, Corsairs, the Cierva autogyro, a Spartan high-wing cabin machine, two Breda 27s, a Hawk I, two Atlases used for training, three Fleets, a Waco single-seat advanced trainer and two Focke-Wulf trainers.

CAF Aircraft as of 20 January 1937

6	Savoia S 72 (1 squadron)
6	Heinkel He 111 (1 squadron)
40	Northrop Gamma (4 squadrons)
18	Fiat BR 3 (1 squadron), incl 10 used for training
19	Curtiss Shrike (2 squadrons)
56	Vought Corsair (4 squadrons), incl 16 used for training
121	Douglas O-2MC, including 24 used for bombing (3 squadrons), 53 for reconnaissance (5 squadrons) and 44 for training
96	Curtiss Hawk II and III (8 squadrons), including 19 used for training
8	Fiat CR 32 (1 squadron)
10	Boeing 281 (1 squadron)
12	Fleet F5
16	Fleet 7A
97	Fleet 10
19	Breda Ba 25
18	Breda Ba 28
16	Focke-Wulf FW 44 Stieglitz
7	Armstrong Witworth (AW 16), used for training
7	Breda Ba 27, used for training
10	Avro, used for training, including 2 to be w/o
15	Breguet 27 (and Breguet 14?), used for training
6	Stearman, used for transport and target-towing
6	Caproni Ca 111 and Ca 101, used for transport
1	Cierva Autogyro
4	Ryan, to be written off
2	de Havilland Puss Moth, to be written off
19	de Havilland Moth, to be written off
1	Arrow, to be written off
4	Armstrong Witworth Atlas, to be written off
4	Avro Avian, to be written off
1	Curtiss Fledgling, to be written off
1	Curtiss Trainer, to be written off
2	Travel Air, to be written off
1	Fairchild, to be written off
9	Junkers (K 47 and others types), to be written off
2	Boeing (247), to be written off
2	Northrop Alpha, to be written off
5	Pitcairn, to be written off
5	Stinson, to be written off
4	Waco, to be written off

Aircraft Deliveries

The CNAC airline company had ordered two Sikorsky S-43W amphibians, but when the first one arrived in January 1937 it was requisitioned for permanent use by Chiang Kai-shek as a VIP aircraft. It was erected at Lunghua and was then handed over to the CAF. A single Spartan 7W-P1 Ex-

30 In the event the following squadrons were disbanded: the 1st (Northrop), 2nd (Northrop), 3rd (Douglas), 5th (Corsair), 6th (Corsair), 12th (Corsair), 13th (Douglas), 16th (Corsair), 18th (Corsair), 25th (Hawk III) and 31st (Douglas). The 14th Squadron received Northrops instead of the Fiat BR 3s and the 30th Squadron was formed with Martin bombers. The reduction was still ten squadrons.

Line-up of Curtiss Hawks, probably during a presentation ceremony. (CAHC)

ecutive fitted out as a reconnaissance aircraft was purchased and delivered about September 1937. It was assigned to the 13th Squadron.

The first three of nine Martin M-139WC twin-engined bombers arrived in Hong Kong in February 1937, were checked over and then shipped to Hankow. The third of these three was formally handed over to the CAF on 17 May. They were based at Nanking for the time being and were then assigned to the 30th Squadron of 8th Bomb Group. The next three arrived in June and the last three were shipped on "Tai Yin" in August, but due to the outbreak of war they were not landed in Hong Kong as intended. They were instead stored in Manila and arrived in Hong Kong only in December 1938. Martin bombers were also used by the 14th (Volunteer) Squadron.

As already mentioned, Canton had ordered 30 Vultee V-11 two-seat attack bombers early in 1936. Parts and sub-assemblies were assembled by CAMCO, first at Hangchow, then at Hankow and at Hengyang and the V-11s were then assigned to the 14th (Volunteer) Squadron at Hangchow, which began operations in January 1938.

A Curtiss CW-19R two-seat training and light attack monoplane was sent to China for demonstrations in the summer of 1937. It was painted with Chinese markings, and

This Curtiss Hawk III seems to be brand new.

A Curtiss H75M Hawk of 25th Squadron.

was probably purchased, but crashed on 5 January 1938. Another Curtiss product, an H-75H Hawk single-seat fighter, was completed in June 1937 and shipped to China as a demonstrator. It was shown in Nanking by company pilot Peter Brewster on 25 August and it was finally bought by Madame Chiang and presented to Colonel Chennault as his own personal aircraft! A North American NA-16-2 (NA-20) two-seat trainer was demonstrated in Nanking during the summer of 1937, but was later returned to the USA and both the H-75 and NA-16 would later be ordered in quantity for the CAF.

American Captain Claire Chennault had accepted an invitation to come to China as an air adviser and arrived in Shanghai on the "President Garfield" in May 1937. He was instructed to make an immediate tour of all CAF aerodromes to make a survey of the CAF. While he was at Loyang the city suffered a Japanese attack and he decided to stay to help China fight back. He was made a Colonel in the CAF and was put "in charge of CAF training and operations" on 1 September. Among other things he set up an air raid control system for the CAF fighter units. In 1938 he was retired from active service and was requested to head instruction at an advanced flying school at Kunming.

On 5 May 1937 an aviation day ceremony was staged in Canton and 18 aircraft bought from funds raised in Kwangtung as gifts to Marshal Chiang Kai-shek on his 50th birthday were named. At Tin Ho Aerodrome a bottle of wine was broken on the fuselage of each machine, formation flights were made and pamphlets were dropped over several cities. About 30 aircraft came down from Hangchow for the air show.

In July 1937 the Nanking Government took over the

Thirty Vultee V-11-Gs were ordered, originally by the Canton Government, and delivered in 1937-38.

The CAF had nine Martin M-139WC bombers.

Szechwan Air Force at Chungking. All troops, aircraft, probably mostly old Potez 25s, airfields, arsenals and repair shops were handed over. The CAF was now under the control of General Chiang and Madame Chiang Kai-shek, who early in 1936 was appointed Secretary General for Air.

The Beginning of the Sino-Japanese War

A Japanese attack on Marco Polo Bridge (Lukouchiao) in July 1937 marked the beginning of the Sino-Japanese War. China declared the War of Resistance against Japan. Fighting spread through North China and by 13 August the hostilities had reached Shanghai. From 1937 to 1939 the Japanese Army advanced and finally occupied most of the important and heavily populated areas in China.

On the night of 7 July 1937 Chinese troops clashed with a Japanese battalion near Marco Polo Bridge at Wanping, south-west of Peking. On 11 July Japan decided to mobilise and send additional troops to China and Chiang Kai-shek ordered troops to Paoting. Fighting broke out in Hopei and around Shanghai. On 7 August 1937 the National Defence Council decided to fight a general war against Japan.

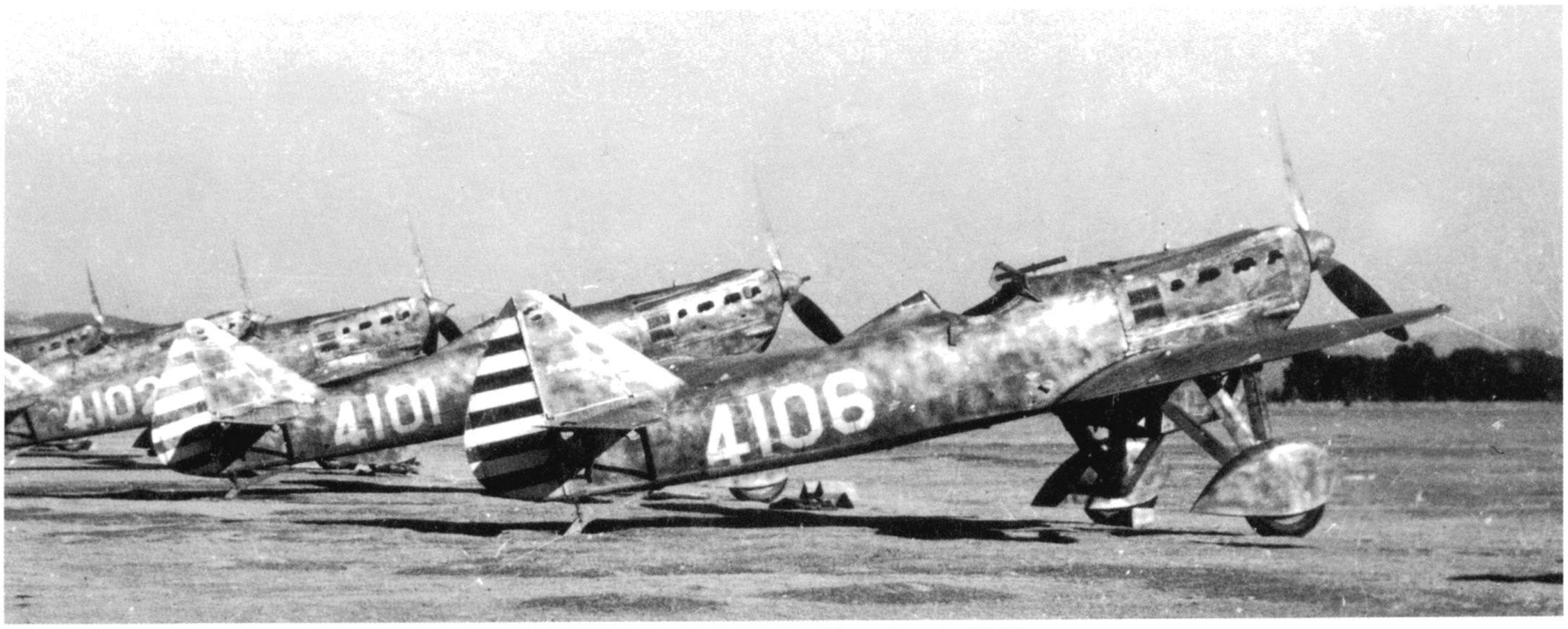
On 14 August the CAF bombed the Japanese naval installations near Shanghai and attempted to attack the Japanese cruiser "Izumo". Unfortunately one of the bombs hit a hotel and another building, killing a large number of people. The Japanese forces in Shanghai had been building up their strength for some time and the Chinese Army was driven out of the city and suffered a major defeat in November. Peking had been occupied by the Japanese on 31 July and they then continued into Chahar and took Kalgan on 3 September, followed by the main cities in Suiyuan in October.

Changchow fell on 29 November and the Japanese Army was soon approaching Nanking. The Chinese Government now moved to Chungking and the military headquarters to Wuhan. On 13 December the Japanese finally entered Nanking. Meanwhile the Japanese advanced also in North China and took Taiyüan on 8-9 November.

The CAF Moves to War Stations

The number of squadrons had been reduced to 21, as already described, but when the war broke out two additional Douglas O-2 squadrons immediately started forming with nine aircraft each as an emergency measure. The total number of squadrons was then 23. Another three reconnaissance squadrons were being formed with Corsairs, but they were not ready, and the Heinkel He 111 bomber squadron was ordered to remain at Nanchang, as it had no bombs. The rest of the CAF was ordered to move to war stations before 15 August and the squadrons were to be based as follows:

Squadron	Aircraft Type	War Station
4th	Douglas O-2MC	Chih Chiachwang
7th	Hawk III	Sinsiang
8th	Fiat CR 32	Nanking
9th	Northrop	Tsining
10th	Savoia S 72	Sinsiang
11th	Northrop	Tsining
14th	Northrop	Tsining
15th	Douglas O-2MC	Tsinan
17th	Boeing 281	Nanking
19th	Heinkel He 111	Nanchang
20th	Douglas O-2MC	Siaokan
21st	Hawk III	Chih Chiachwang
22nd	Hawk III	Taming
23rd	Hawk III	Tsinan
24th	Hawk III	Tsinan
26th	Shrike	Taming
27th	Shrike	Taming
28th	Hawk I	Nanchang
29th	Hawk III	Canton
30th	Martin M-139	Sinsiang



Twenty-four Dewoitine D 510Cs were delivered from France for the 41st Squadron in 1938.

When mobilised the CAF Order of Battle was as follows:

Air Group	Squadron	Type (Ready + Under repair)
1	1	-
	2	-
	20	Yang Cheng (Douglas) (7+2)
	29	Hawk (7+2)
2	9	Northrop (9)
	11	Northrop (9)
	14	Northrop (8+1)
	HQ	Northrop (2+7)
3	8	Fiat CR 32 (5+2)
	17	Boeing 281 (8+1)
	HQ	Hawk (2+1)
4	21	Hawk (8+1)
	22	Hawk (9)
	23	Hawk (6+3)
	HQ	Hawk (3+3)
5	24	Hawk (9)
	25	Hawk (9)
	28	Hawk (8+1)
	HQ	Hawk (0+6)
6	3	Douglas O-2MC (11+1)
	4	Douglas O-2MC (10+1)
	5	Douglas O-2MC (11)
	HQ	Douglas O-2MC (1+10)
7	12	Corsair (10)
	16	Corsair (9)
	—	Corsair (2+11)
	HQ	Douglas O-2MC (0+2)
8	10	Savoia S 72 (4+1)
	19	Heinkel He 111 (6)
	30	Martin M-139 (5+1)
	HQ	—
9	26	Shrike (9)
	27	Shrike (9)
	HQ	Shrike (1+1)
Provisional	32	Douglas O-2MC (9)
	34	Hawk (9)
	35	Corsair (9)
	HQ	Douglas (4+2), Hawk (5+1), Corsair (1)

Disbanded squadrons: 6, 7, 13, 15, 18 and 31

By July 1937 the Kwangsi Air Force consisted of two squadrons with five Nakajima Type 91 fighters, six Mitsubishi Type 92s, two Armstrong Witworth Atlas Mk IIs, three AW 16s and two Westland Wapitis, and the Flying Training School with nine Avro 637s and 626s, a single Avro 621, five Avro Cadets, 18 Avians and nine Nieuport ND 29s. One squadron was based at Nanning and the other at Wong Min. When the war with Japan started the Aeronautical Affairs Commission in Nanking demanded an immediate take-over of the Kwangsi Air Force. The personnel were eager to go northwards, and started preparing for war against Japan and all aircraft and personnel were transferred to Central Government control in August 1937.

New Equipment Needed

The United States imposed a partial arms embargo on China and Japan on 14 September 1937. The official reason was that they wanted to avoid incidents on the high seas that might drag the Unites States into hostilities. Deliveries of aircraft were not permitted and American volunteers were forbidden to serve in China. This of course caused big difficulties for China, as the CAF had made most of its previous purchases from the USA and had standardised on

American equipment. China in fact faced the same problem as Republican Spain, which was also affected by an arms embargo when trying to obtain aircraft and arms for the defence of the Government against the Franco rebels in 1936-38. Germany and Italy continued to send aircraft and personnel to Franco despite of the Spanish embargo. In the Sino-Japanese War Japan produced its own aircraft and was not affected by the embargo.

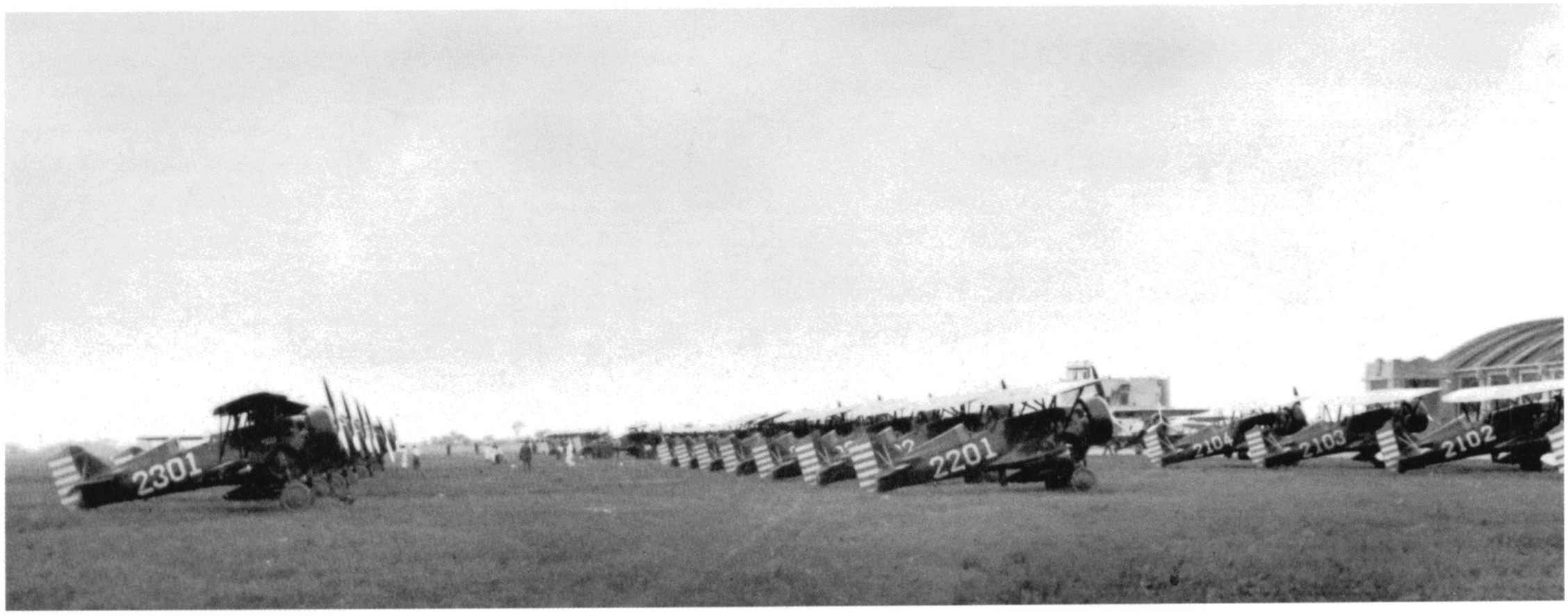
However, the first aircraft ordered from the Italian SINAW factory, six Savoia S 81B twin-engine bombers, were nearing completion. An additional machine had been purchased directly from Italy and arrived in Hong Kong in October 1937, but it remained there because the cases were too large to be shipped into China by rail. A permission to assemble it in Hong Kong was refused because of the embargo. Six of the nine cases were finally sent to Canton by rail in June 1938. Only two of the examples built at Nanchang were ever completed and they were issued to the 13th Squadron. One more was finished but was destroyed with the others when the Japanese bombed the factory in December 1937. One Breda Ba 65 two-seat fighter and ground-attack monoplane was about to be shipped to SINAW with 29 non-assembled sets of parts, but these aircraft never reached China.

A contract was signed in August 1937 with Aircraft (China), Ltd, for 20 Gloster Gladiator Mk I single-seat fighters. An option for another 16 was taken up in October, and all 36 were delivered to Hong Kong. Gloster company pilot M Summers arrived with the first nine on 11 November and they were all assembled and delivered within a week. Eleven more arrived at the end of the month, but went instead to Canton, although only three or four were assembled there. The rest were dispersed and were assembled between December 1937 and January 1938. The final 16 arrived in Hong Kong in January 1938, but most of the assembling plant had now moved to Hengyang, Hunan, and the new machines were instead assembled at the Shoukouling aerodrome in Canton. The Gladiators were issued to the 17th, 28th and 29th Squadrons of the 5th Air Group.

The only other aircraft that the Chinese Government managed to acquire in 1937 was a number intended for use as ambulances. A total of ten Beechcraft D 17R four-seat cabin biplanes, plus one extra intended as spare parts were imported in 1937-39. The first two arrived late in 1937, were assembled at Kai Tak, Hong Kong, and flew to Canton in February 1938.

The Beech 17s were primarily intended for transporting doctors and nurses rapidly from place to place and all were painted white with large red crosses and no national

The effects of the Japanese bombing of Shanghai.



Curtiss Hawk III fighters of the 4th Air Group lined up.

markings. They were attached to different CAF headquarters and as the Japanese made no difference between civil, military and Red Cross markings, they were soon camouflaged and painted with military insignia. Four more were delivered late in 1938 and another five in 1939. At least one was transferred to CNAC, however. On 10 June 1940 pilot Tan Shih-chang deserted with a Beech 17 belonging to the Air Transport Squadron at Chungking and flew it to Japanese-held Nanking.

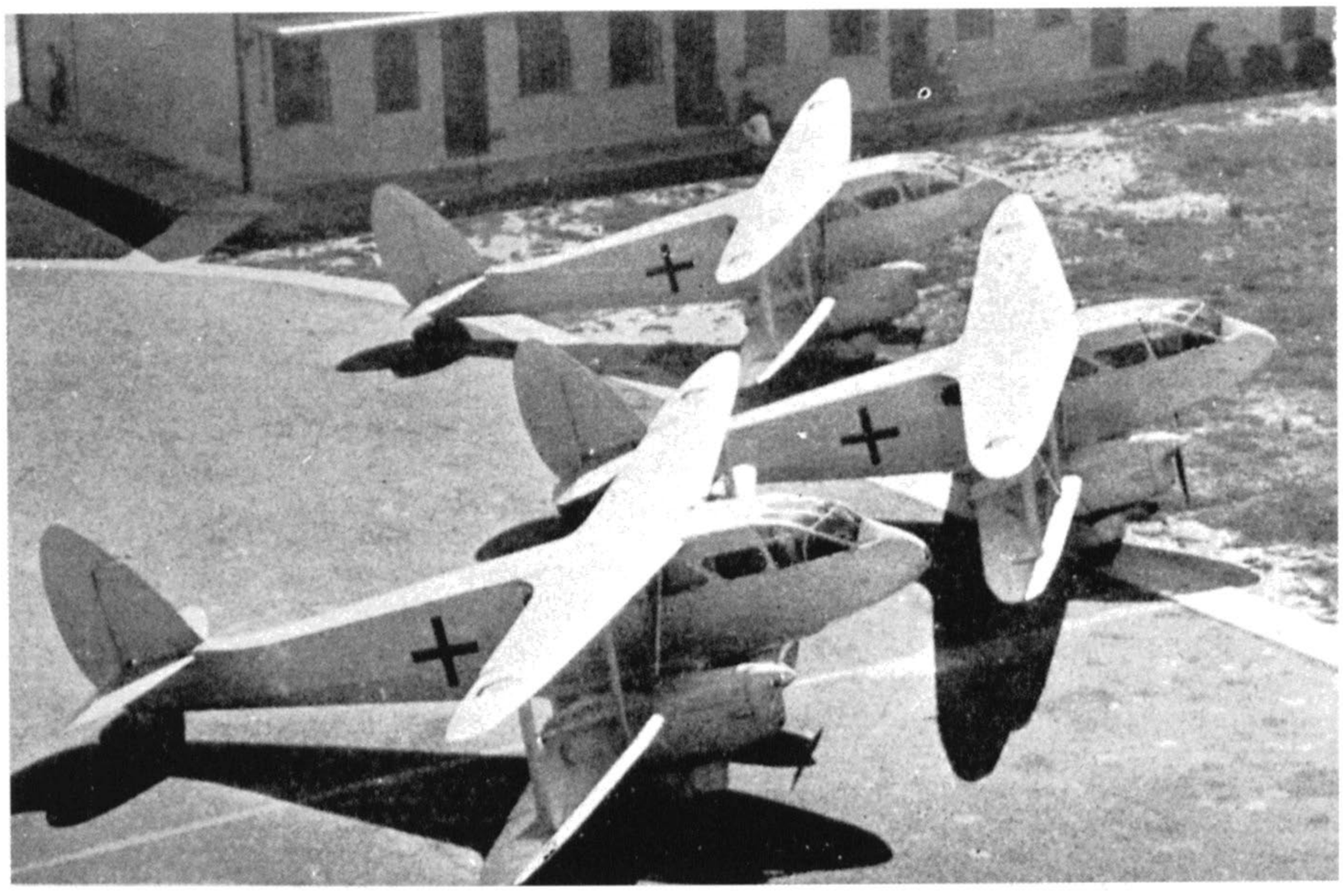
Six de Havilland DH 89A Dragon Rapides were ordered and shipped in November-December 1937. They arrived in Hong Kong in January 1938 and were assembled there. Three were fitted out as ambulances and three as passenger transports, but due to the embargo on import of arms to China the delivery of these aircraft was delayed for some time by the British authorities. The three ambulances were flown from Kai Tak by Chinese pilots in February 1938, but two crashed on landing, one of them being completely destroyed. The third was shot down by friendly anti-aircraft fire. They were painted with red crosses, but were in "original colours", which were not the same as those used on the Beechcraft ambulance planes belonging to the Chinese Medical Corps. The remaining three Dragon Rapides arrived in Hong Kong in May and June and were delivered in July.

Soviet Aid - "Operation Z"

When the Western powers refused to come to China's help, Chiang decided to turn to the Soviet Union, despite of political differences. On 21 August 1937 a non-aggression pact between China and the Soviet Union was signed, as well as an agreement on military aid and in September 1937 the USSR decided to start deliveries of aircraft and other types of arms immediately, without waiting for formal contracts. Examples of Soviet arms were demonstrated to Chinese representatives at Shchelkovo aerodrome, including the twin-engine Tupolev SB bomber, the single-seat Polikarpov I-15 fighter biplane, the Polikarpov UTI-4, a two-seat training version of the I-16 fighter monoplane, and T-26 tanks.

On 14 September the head of the Chinese delegation to Moscow asked for Russian crews to fly the aircraft. Stalin ordered Voroshilov to select "volunteer" pilots and other aircrew for two wings, one of Polikarpov I-16 fighters (31 aircraft and 101 personnel) and one of Tupolev SB bombers (31 aircraft and 153 personnel), and to send them to China. On 21 October 447 pilots, navigators, mechanics, technical specialists, etc, had been assembled and they were sent to Alma-Ata, near China's north-western border. The whole operation was called "Operation Z".

A credit agreement with the USSR, intended to cover the deliveries that had

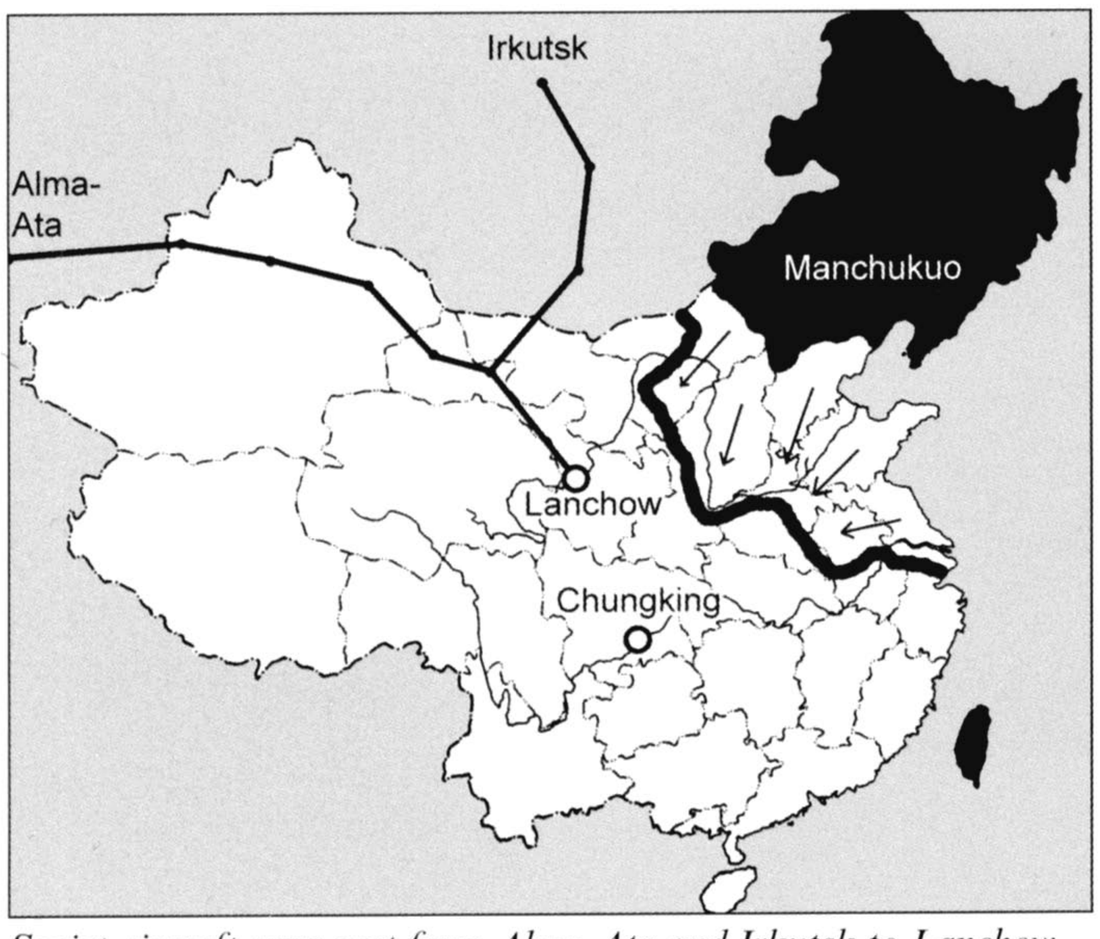


Six DH 89A Dragon Rapides were obtained in 1938 for ambulance duties.

Several of the Vought New Corsairs were still in service by 1938.

already started, was signed on 1 March 1938. I was for the sum of 50 million US Dollars and it was to take effect retroactively from 31 October 1937. Three contracts were concluded under this agreement. The first, dated 3 March 1938, called for the delivery of 62 Tupolev SB bombers, six four-engined Tupolev TB-3 heavy bombers, 94 Polikarpov I-16 fighters, eight Polikarpov UTI-4 fighter trainers, 62 Polikarpov I-15bis fighters, spare engines and parts. These aircraft were formally handed over between 5 March and 10 June 1938. At the same time 82 T-26 tanks, tractors, artillery and other arms were ordered.

A second contract signed on 11 March 1938 included no aviation equipment, but the third contract, dated 22 March 1938, was for 60 Polikarpov I-15s (I-15bis), five Yakovlev UT-1 two-seat trainers, spare engines and parts, and 400 trucks. Delivery took place between 25 March and 27 June 1938.

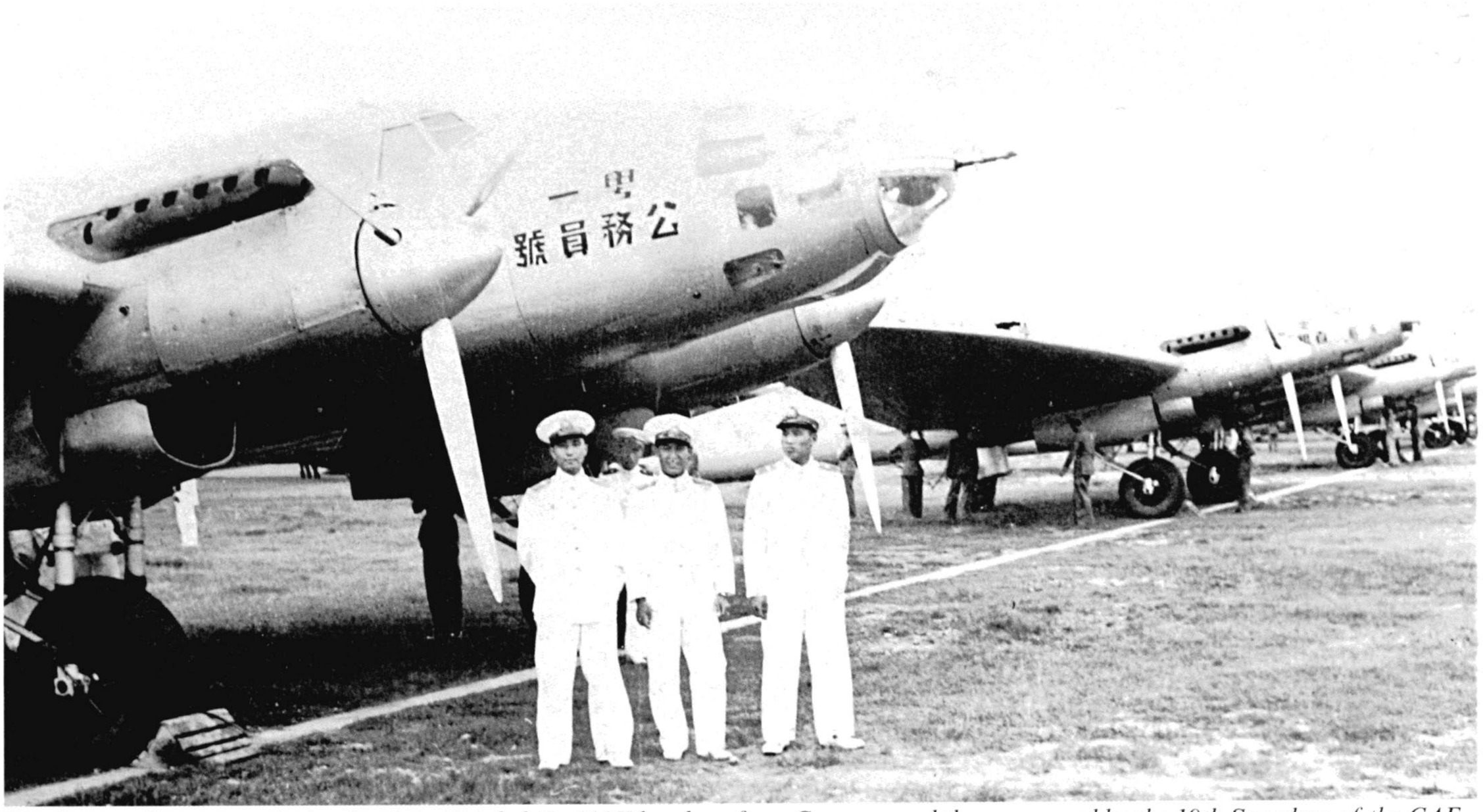


Soviet aircraft were sent from Alma-Ata and Irkutsk to Lanchow and both routes were characterised by difficult geographical and meteorological conditions. Many of the aircraft were flown all the way to China.

The equipment was sent to China from Alma-Ata in Kazakhstan and from Irkutsk in Siberia. Both delivery routes ended at Lanchow in Kansu and were characterised by difficult geographical and meteorological conditions. Many of the aircraft were flown all the way to China and eleven airfields were laid out along the route from Alma-Ata, where the aircraft were assembled, to Lanchow. Z A Joffe was appointed head engineer of the route and a number of Soviet aircraft and crews were assigned to it for liaison and fast transport work. A Tupolev ANT-9 was first used (pilot: F M Korshunov) and then, from the autumn of 1938, a Douglas DC-3. A second DC-3 was added later in 1938 and was flown by V S Lebedev. One of the DC-3s crashed after taking off from Hankow in October with 22 Russian personnel on board. A number of Tupolev TB-3s were used for passenger and freight transport (pilots Samokhin, Ugryumov, Koval and others), as well as single-engine Polikarpov P-5s (pilots Vyukov and Vlasov).

Four Ilyushin DB-3 twin-engine bombers were converted into transports in Moscow and sent to Alma-Ata at the end of October 1937. One of these crashed in November and was later replaced by a new machine especially fitted out for passenger transport, and later a sixth DB-3 with extra tanks for fuel transport was sent.

Deliveries started in October 1937 along the 3,000-km long road between Alma-Ata and Lanchow. Aircraft and equipment were loaded on lorries at Sary-Ozek railway station near Alma-Ata. The caravans were normally made up of 50 ZIS-5 and ZIS-6 trucks and the whole trip to Lanchow



The Canton Government had ordered six Heinkel He 111K bombers from Germany and they were used by the 19th Squadron of the CAF.

took about one month. The first consignment left on 17 October. Some material was sent by boat from Odessa and in November the first two ships with 82 T-26 tanks, tractors, cars, artillery and other equipment left Sevastopol for Hong Kong. Larger aircraft were normally flown, but the single-engined I-15 and I-16 fighters were sent by truck to Hami and assembled there. They were then flown to Lanchow in groups normally guided by an SB.

Different numbers for total deliveries have been published. One Russian source has 904 aircraft for the period September 1937 to June 1941 (318 bombers, 543 fighters[31] and 44 trainers. Other figures are 1,235, 1,250 and 1,260.

Soviet military advisers were sent to supervise the use of the new aircraft. The first group of 27 arrived in May-June 1938 and by October 1939 there were 80. Until mid-1939 a total of 3,665 Soviet military specialists had participated in the fighting against the Japanese in China and the aviation advisers included P N Anisimov, P F Zhigarev, F P Polynin, A G Rytov, P V Rychagov, G I Tkhor, T T Khryukin, and others. Several of them had been participants in the Spainish Civil War. Pavel F Zhigarev was appointed Chief Aviation Adviser and was attached to General Mao Pang-ch'u's staff with 8-10 other Russians. He was replaced by Tkhor in mid-1938, who was in turn replaced by Anisimov.

Soviet Aircraft Arrive

On 27 September 1937 the first of two groups of ten I-16s each, commanded by Smirnov, flew to Lanchow led by an SB. In October one wing (31 aircraft) of SBs led by N M Kidalinsky and one wing of I-16s led by G M Prokofiev were sent out from Alma-Ata to Lanchow and later Hankow. These units included a total of 254 men. Several aircraft of the first I-16 group crashed and its leader V Kurdyumov was killed in a crash at Suchow. A second group of nine I-16s led by Kombrig Pumpur left in December and arrived in Nanking early the same month. The first ten SBs had been sent by train from Moscow on 17 September, another 16 on the 24th and five on 27th, total 31. Forty-two SB crews commanded by N M Kidalinski assembled at Alma-Ata and were divided into two groups, the first leaving with 21 SBs (leader Machin). A second group led by Kidalinski arrived at Lanchow two weeks later, but some of the SBs were retained at Alma-Ata for service as lead aircraft for single-engined fighters.

On 20 October the first seven SBs arrived at Urumchi. Two crashed there, however, and only five reached Suchow. The first of these landed at Lanchow on 24 October and by the 26th nine had arrived there. The aircraft were delivered devoid of national insignia - Chinese insignia being painted on at Lanchow.

Eight SBs were still at Alma-Ata by 30 October. By 6 November 27 SBs had left the USSR and by 16 November there were 22 at Lanchow and a total of 58 had reached China. Kidalinski's wing was moved to Hankow in October and mid-November, and then to Nanking. One group of nine SBs flew to Hankow and Nanking, arrived there on 30 November and was added to Kidalinski's wing.

In October six TB-3s headed by Captain Dontsov arrived at Alma-Ata. The six heavy bombers that were to be handed over to the Chinese were loaded with bombs and ammunition and reached Lanchow on 21 October. At the end of November one of them was lost in a crash during conversion training and on 30 November the remaining five were flown to Nanchang. On 13 December two were

31 662 would seem to be a more likely number for fighters.

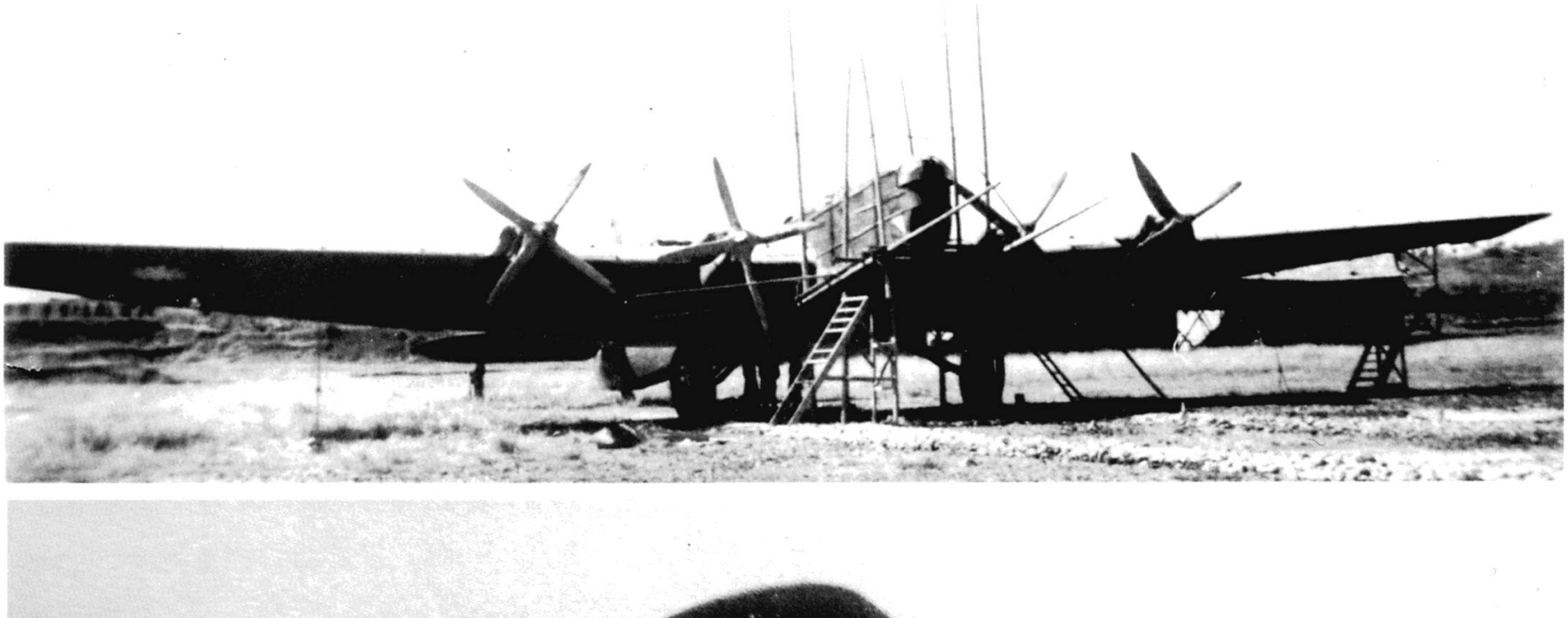
Twelve Henschel Hs 123s were the last arrivals from Germany. They were issued to 15th Squadron. (Wings of China)

destroyed during a Japanese air attack and the remaining three returned to Lanchow on 25 December to be used as transports together with remaining Savoia S 72s. One crashed on 16 March 1938.

The personnel of a second SB wing, 31 crews, about 150 men in total, and commanded by F P Polynin, was sent from Irkutsk to Lanchow in November 1937. The aircraft arrived by train to Alma-Ata and Irkutsk for assembly and testing and sixteen left Alma-Ata at the end of that month. Two separate groups were sent out from Irkutsk and one led by G Tkhor flew over Mongolia to Suchow and Lanchow, and then continued to Hankow. In order to replace aircraft damaged along the route ten extra SBs were sent from Moscow at the middle of November and started leaving Alma-Ata by 12 December.

Organisation of the Irkutsk route, which went via Ulan-Bator and Dalan-Dzadagad, had started in September. Aircraft were assembled in Factory No 125 at Irkutsk and the first SB bomber was test flown on 26 October. Tkhor first flew the whole route in a Polikarpov R-5 and then three TB-3s, escorted by a pair of R-5s, were sent with bombs and ammunition. They arrived at Suchow on 19 Novem-

The old Douglas O2MCs soldiered on in the CAF reconnaissance units.



Above: Deliveries from the Soviet Union included six Tupolev TB-3 heavy bombers (top) and large numbers of Polikarkov I-15 bis fighters (bottom).

ber. The first group of 15 SBs was led by Captain V I Klevtsov. Ten SBs and three R-5s loaded with equipment landed at Suchow on 7 December.

The first I-16s, a group of 23 aircraft led by G M Prokofiev, landed in Nanking on 1 December 1937, as did the first group of 20 SBs under N M Kidalinsky, but after the fall of Nanking the Soviet units moved to Hankow and Nanchang. About 40 I-16s arrived at Nanchang early in January 1938. The personnel of an I-15 wing (99 men, of which 39 were pilots), to be commanded by A S Blagoveshchensky, were sent to China in November-December 1937 and January 1938. Their aircraft were not flown in, but sent by lorries to Hami in Sinkiang for assembly there, and did not arrive until in the spring of 1938.

In January-February 1938 over 100 Soviet aircraft, including Polynin's wing with 35 SBs and Ivanov's I-16 unit, were based at Hankow. There were some 85-90 aircraft at Nanchang, including M G Machin's SB wing and Blagoveshchensky's I-15 and I-16 fighters. Machin had replaced Kidalinsky as wing commander.

Officially, training of Chinese pilots at Lanchow started only on 3 December 1937 under F F Zherebchenko. However, the training of pilots and crews and conversion to Russian equipment in fact started already in October, when SB crews were trained for the 1st and 2nd Squadrons of the 1st Group. Then followed the 11th Squadron of the 2nd Group, the 4th Squadron and, late in the year, the 19th Squadron. A number of TB-3 crews were trained at the same time. In December 1937 a team of instructors led by F I Dobysh trained 45 Chinese SB pilots in Nanchang.

More Soviet Aircraft in 1938

In December 1937 China asked for more aircraft and it was decided to send 62 I-15 (I-15bis) fighters and these were delivered in April 1938. As already mentioned, they were later included in the contract signed in March 1938. The total numbers of aircraft sent until spring 1938 was 94 I-16s, 122 I-15s, 8 UTI-4s, 62 SBs, 6 TB-3s and 5 UT-1s. The I-16s were of the versions Type 5 and Type 10. By 14 June 1938 100 extra machine-guns had been sent for conversion of 60 Type 5 I-16s to Type 10. The first caravan of trucks bound for Hami arrived at the end of April 1938 with some

of the 62 I-15bis fighters, which were delivered with bombs, ammunition and spare parts and after assembly the aircraft were flown to Lanchow.

The 4th Group gave their remaining Hawk IIIs to the 5th Group on 21 September and converted to the I-16 and the 7th and 8th Squadrons of the 3rd Group moved to Sian at the end of August to convert to the I-15. Both I-15bis and I-16s were delivered to Blagoveshchensky's fighter unit at Nanchang.

A second credit agreement was signed on 1 July 1938 and the first contract under this agreement was concluded on 3 July 1938. Deliveries were made between 5 July and 28 September 1938 of 80 Tupolev SBs, 120 Polikarpov I-15bis, 46 M-25 engines, 60 M-100 engines, machine guns, trucks and other arms and equipment. On 27 July 1938 Chiang asked for further aid in the form of a chief aeronautical adviser, further personnel and a batch of aircraft for the defence of Hankow and in response to this G I Tkhor was appointed Chief Aeronautical Adviser to China on 17 August.

In April-May 1938 S V Slyusarev flew to from Irkutsk to Lanchow as the head of a group of SBs. It had been planned to exchange all Soviet personal during a period from 25 May until 5 June 1938, and for that reason Polynin's group returned to Lanchow in June. Their aircraft were overhauled and the crews were replaced by a new group under T T Khryukin (one squadron commanded by Khryukin and one by Titov). On 3 June Tkhor brought 13 SBs to Ulan-Bator and another 15 arrived there on 7 June and then continued to Lanchow. S V Slyusarev became commander of the group formed of these aviators. A little later another group headed by G V Titov with 12 SBs was sent via Mongolia. By spring 1939 crews from Slyusarev's group had transferred about 60 SBs from Irkutsk and most of these aircraft were handed over to the CAF. The last Russians of this group returned home in February.

Delivery Route Alma-Ata to Lanchow for Soviet Aircraft

The following aerodromes were provided with Russian equipment and personnel:

No 1 Kuldsha, No 2 Shikhe, No 3 Urumchi, No 4 Guchen (Tsitai), No 5 Hami, No 6 Ansi, No 7 Suchow, No 8 Liangchow (Uvei) and No 9 Lanchow. A special patrol unit with six SBs and 10 I-16s was set up at Hami for the protection the route and the assembly shops at Hami against Japanese aircraft.

Leftovers From the Spanish Civil War

In 1937 the Chinese Government managed to buy a batch of 20 Bellanca 28-90A two-seat bombers that had originally been purchased by Hanover Sales Corporation on behalf of the Spanish Republican Government in November 1936. The US State Department had prohibited that sale and the aircraft were then resold to China. An export licence was obtained by the Wah Chang Trading Company on 9 August 1937 and on 27 August, 19 of the aircraft left Baltimore on board SS "Wichita". The 20th machine was still under construction and was sent later. The aircraft had to be offloaded at San Pedro, California, however, following the issuance of the special Presidential Order on 14 September that forbade American ships to carry arms to China.

They were sent by train to San Francisco on 23 October

General Chen standing on a Martin bomber, prior to going on a leaflet dropping raid. Chen later became Commander-in-Chief of the Chinese Air Force.

This 4th Air Group Polikarpov I-15 bis (named "Canada") force landed near the frontline but was recovered with the pilot by the Chinese Army. (Wings of China)

and then shipped from the USA on a Dutch freighter via Great Britain in November 1937. They arrived in Hong Kong in January 1938 and five were delivered there. As the aircraft were found to have no mountings for machine guns and no synchronisation gear, the CAF first refused to take delivery of the other 15. They were apparently transhipped to Shanghai and one was wrecked in unloading there. By March 1938, 18 had arrived in Hangchow and Ninkiang, but many were destroyed in a Japanese air raid and during the test flights. The Bellancas were issued to the 27th Squadron, but due to serious maintenance problems they were never used in action. On 9 August 1938 Bellanca offered to deliver more aircraft and a contract for 200 bombers was allegedly negotiated but never signed.

On 23 February 1938 a batch of 50 North American NA-16 two-seat trainers was ordered and 29 of these had reached Hong Kong by 18 June. They entered service in the autumn of 1938 at the CAF schools in Kunming.

On 18 October 1937 Hitler had decided to stop further deliveries of German arms to China, but for some reason this was changed again two days later and some deliveries were allowed, but had to be kept a secret to Japan! China had ordered 12 Henschel Hs 123A-1 single-seat dive-bombers, which arrived in Hong Kong in March 1938. Eight were sent by railway to Canton during the same month and the other four followed in April. They were assembled and test-flown by Henschel company pilot von Winterfeld at Hankow and were then issued to the 15th Squadron. On the other hand, the 20 Junkers Ju 86K twin-engine bombers ordered in 1936 were not delivered and the Junkers factory in China was not completed either.

A French credit for aircraft purchases was granted in 1936. During his visit to France in July 1937 H H Kung placed an order for 24 Dewoitine 510C and 12 Morane Saulnier MS 406C1 single-engined fighters, and eight Potez 63 twin-engined bombers, nine spare Hispano Suiza engines, spare parts, 58 20-mm Hispano Suiza cannon, 98 Darne machine guns, ammunition and 58,000 bombs. The Dewoitines were to be delivered first, between September 1937 and January 1938, but all French deliveries were delayed.

The Dewoitine contract was made with the Office Francais d'Exportation de Matériel Aéronautique on 3 August 1937 and the aircraft were built by SNCASE. The first two D 510 fighters were shipped

The Tupolev SB bomber.

China received a total of nearly 290 Tupolev SB bombers from the Soviet Union. (Wings of China)

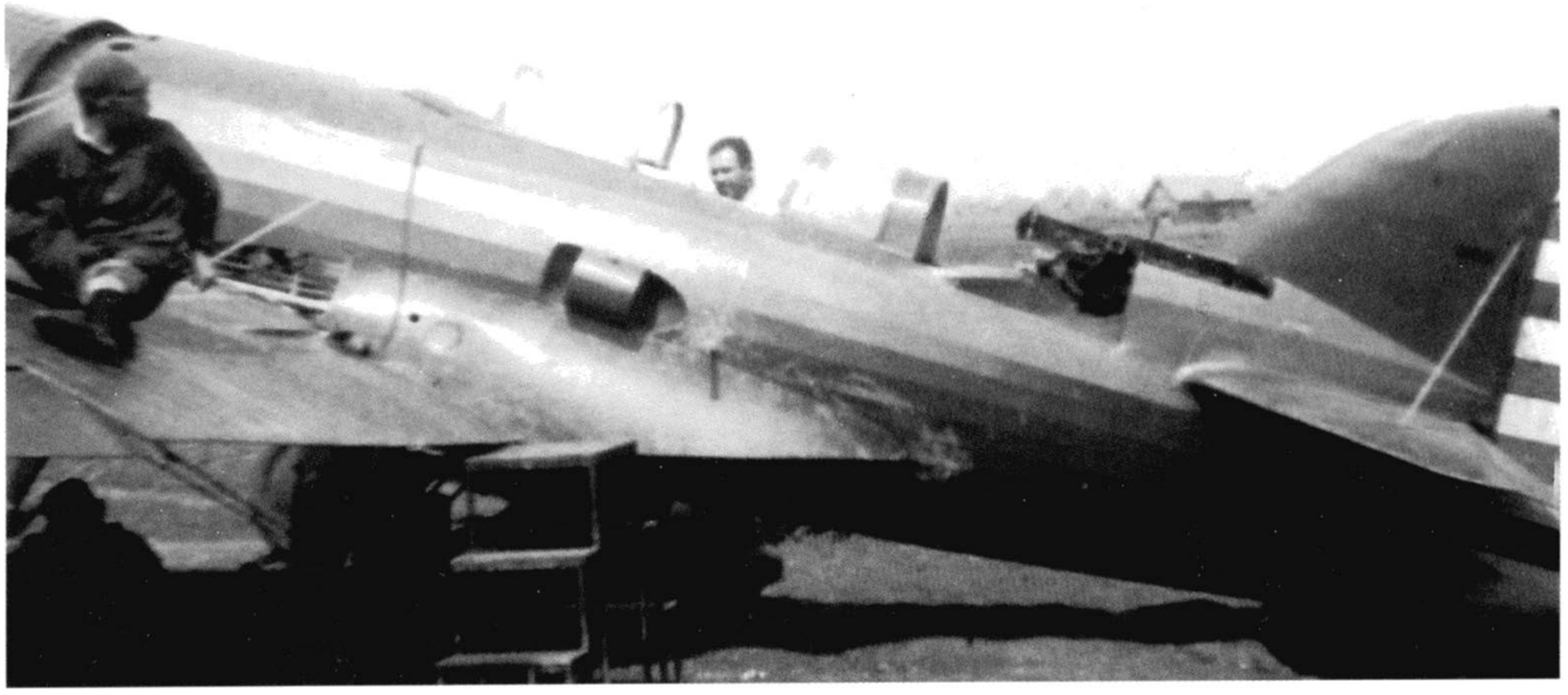
from France on 2 November, but only five were delivered with their engine-mounted cannon before the French Government stopped the export of this weapon. The last six aircraft left France on 17 July 1938. One was assembled at Hanoi and flown to Kunming by a French pilot on 22 June, another 12 were sent by rail and by the end of the month eight of these had been assembled. They were not test-flown, however, due to a misunderstanding about the cost of insurance for the test flights. The one that had already been flown was demonstrated in the air in July, but it took several months to get the others ready.

One machine was written off due to an accident at Haiphong and delivery of the last ten was stopped by the French Minister for Colonies. This embargo was not lifted until in December. On 28 September the Japanese bombed and destroyed three of the Dewoitines at Kunming and one more was damaged. The type was first issued to the 41st (French Volunteer) Squadron. When this unit was disbanded in August 1938, the aircraft were handed over to the 17th Squadron of the 5th Fighter Group at Kunming for use as advanced trainers.

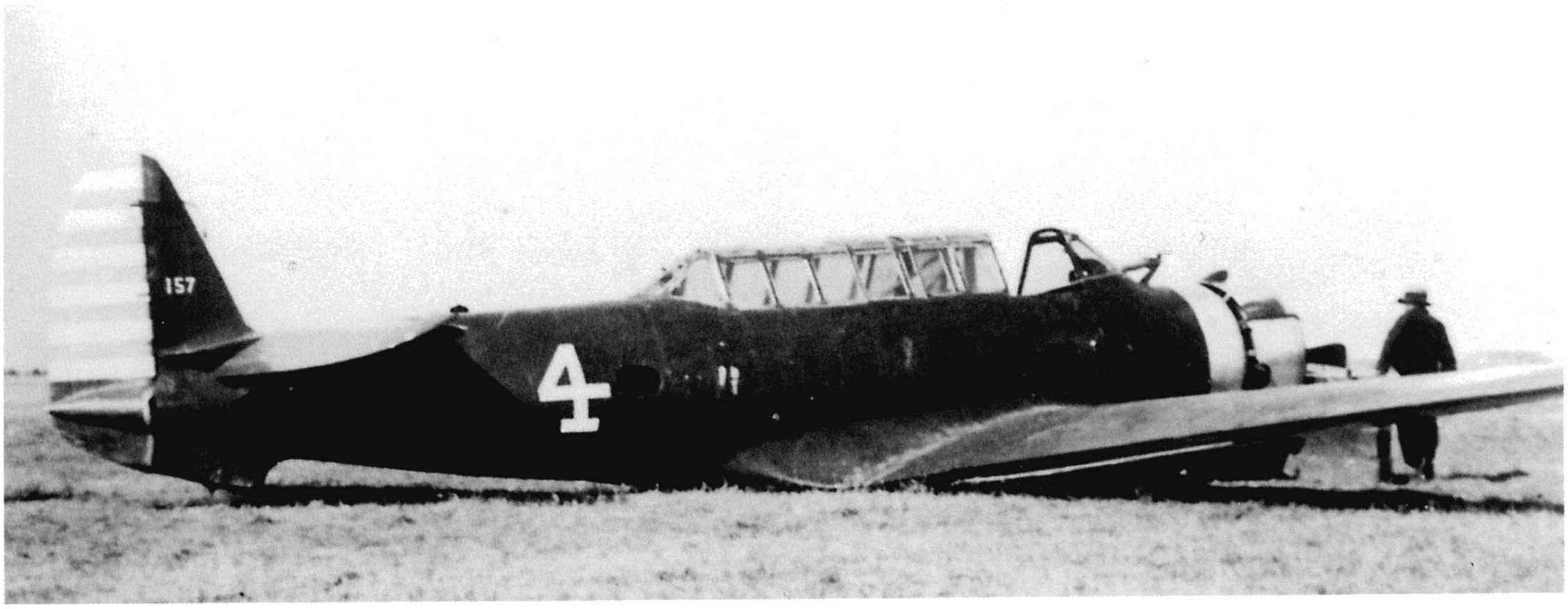
The 12 MS 406 fighters were to have been delivered between January and June 1938. The contract was first shelved, and by the time the aircraft were finally shipped to Haiphong the Second World War was declared. They were sequestered by the French Governor of Indochina and were then issued to a French fighter unit in October 1940. The Potez order comprised four Potez 631C3 three-seat fighters and four Potez 633B2 two-seat attack-bombers. Two of the former were seized at Haiphong in September 1939 and issued to a French unit in Indochina and the four Potez 633s were seized in France. None of these aircraft reached China.

Deliveries of 50 Fleet 10 trainers built in Canada started in February 1938 and 39 of these had been imported trough Hong Kong up to 18 June. According to one source 108 Fleets had been ordered. In any case an order for a second batch of 50 Fleet 10s placed early in 1939 was cancelled in favour of the Ryan STM-2. In August 1937, 30 Curtiss Hawk III and 30 Curtiss H-75M Hawk fighters were ordered. The Hawk IIIs were shipped from the USA in March-June 1938 and the H-75Ms followed between May and August and twenty Hawk IIIs and four H-75Ms had passed through Hong Kong by June 1938. Both types were assembled by CAMCO and test flown by Pete Brewster and others after assembly.

In July 1938 an armed twin-engined Boeing 247Y passenger transport was flown from Hong Kong to Hankow. It had been ordered already on 30 September 1936 by J C Elder, financial advisor to Chang Hsüeh-liang, but delivery had been delayed for several reasons. It was apparently financed through Chinese subscription in the USA and was shipped via Australia to Hong Kong in 1937, but could not be assembled there until the machine gun fittings had been removed. It was incorporated into Chiang Kai-shek's fleet of VIP aircraft and was almost certainly the "Boeing trans-



The 20 Bellanca 28s that were ordered in 1937 had originally been intended for Republican Spain.



One of the 30 Vultee V-11-G light bombers that were acquired in 1937-38.

port" that crashed near the Indochina border in December 1938.

Another "big passenger plane", a Government transport aircraft, crashed on 3 November 1938 near Nanchang, killing 20 people. About September 1937 most of the VIP aircraft had been moved to Ichang and two Junkers W 33 photographic aircraft, two Ford Tri-motors, a Boeing 247 and a Douglas DC-2 were reported to be there. Instructors and pupils of the Central Aviation School at Hangchow had also evacuated to Ichang with 12 O-2MCs. By September the VIP Junkers Ju 52/3m and the Sikorsky S-38 had arrived as well. Pilots attached to the VIP unit included Americans Barr and Leonard, and Germans Just and Martin.

A Japanese Bomb Raid

A Japanese bomb raid on Chengtu as observed by a visiting American officer.

"On Sunday, June 11th (1939), the air raid siren blew about 6:00 PM, announcing an air raid. About 6:30, two squadrons of Chinese planes took off, each squadron consisting of nine planes, one of Russian E-15s and the other of Russian E-16s and they patrolled the skies south and west of the city. I tried to take photographs but as it was getting very dark I stepped into the building to leave my camera. As I did so I noticed the people running and I ran outside again and saw, at approximately 6,000 feet, headed directly in my direction from the north-east, twenty-six Japanese two-engined bombers. They were flying in three-ship elements so flat that the entire formation seemed to be one straight line. I watched them for a few seconds and as they were coming directly at me, I entered the bombproof and got there just as their bombs exploded. I immediately ran outside and watched them until they disappeared from my view. They continued in a slow turn, turning towards the east and were just well over the city wall when the Chinese pursuit attacked. By this time it was so dark that I could not see much, except the tracers. I could hear the whine of the diving pursuit and at the same time see and hear the fire from both sides. I saw no evidence of any airplanes being shot down or of any of them being on fire."

Headquarters and Aviation Schools

Military aviation was organised in two separate units. Under the Commission on Military Affairs (Chairman Chiang Kai-shek) was the Air Force and the Commission on Aeronautical Affairs. The Air Force consisted of the Chief of the Air Force and the operational Bombardment, Observation and Pursuit groups and squadrons. The Commission on Aeronautical Affairs (Acting Chief T V Soong), with Technical/Air Supply, School and Administrative Divisions, was charged with procurement, maintenance, instruction and administration of aviation matters. Chien Ta-chun was Head of the Aviation General Bureau, but General Chou Chih-jou, Head of the operational section of the Air Force, was the real commander.

Primary training was moved from the Central Aviation School at Chien Chiao to Loyang in March 1937 and the rest of the school moved to Kunming, Yünnan, in October 1937. A new Primary Flying School was established at Liuchow, Kwangsi, in the early days of the war and about 40 Fleets and Douglas O-2MCs were moved there from Hangchow. By May 1938 this school had about 70 Fleets, five Avros, three Moths and two other old British types. There were eight American instructors. The Liuchow school was moved to Kunming after the Japanese had established an airbase on Waichow Island.

Early in 1938 Claire Chennault was retired from active service and was requested to instruct at the Advanced Flying School at Kunming. He went there with Chou Chih-jou, who had been relieved from his duties in the Commission on Aeronautical Affairs[32]. A Primary School had been established at Yunnanyi (now Nanhua), 100 miles west of

32 Major-General Chou Chih-jou was later reinstated as acting Chief of the CAF.

Kunming near Lake Tali, and a Basic School at Mengtze, on the Indochina border between Kunming and Hanoi. By this time there were a total of 18 Americans, including C B Adair, at Yunnanyi.

The Advanced Flying School was situated at Wu Chia Ba airport, 7 miles outside Kunming, and had moved there from Hangchow in October 1937. The field had recently been enlarged and had paved runways. There were four old wooden hangars and new hangars were being constructed. The school was commanded by Brigadier-General Chen. There were about 800 cadets and a number of Chinese instructors, and from about 1 April six American instructors. Chennault became chief instructor and William McDonald later took charge of the instructors.

By March 1938 the school had 40 Douglas O-2MCs, six Russian fighters (probably I-16s), two Hawk Is and seven Hawk IIIs. In the summer the first of the 50 North American NA-16s arrived for use at the Advanced and Basic Schools. Japanese bombers raided Kunming on 30 September 1938 and on the following day the school at Mengtze was destroyed. It was soon restarted again, however. A Training Centre headquarters was set up at Kunming and by July 1939 about 15 American pilots were on duty at the Training Centre, acting mostly as check pilots for both students and instructors. Early in 1939 a Non-Commissioned Officers' Pilot School was established at Chengtu with at least 34 Fleet trainers, 20 Douglas O-2MCs, 20 Tupolev SBs, more than 31 Polikarpov I-15s and at least four I-16s.

Notes from the American Visit at Chengtu, June 1939

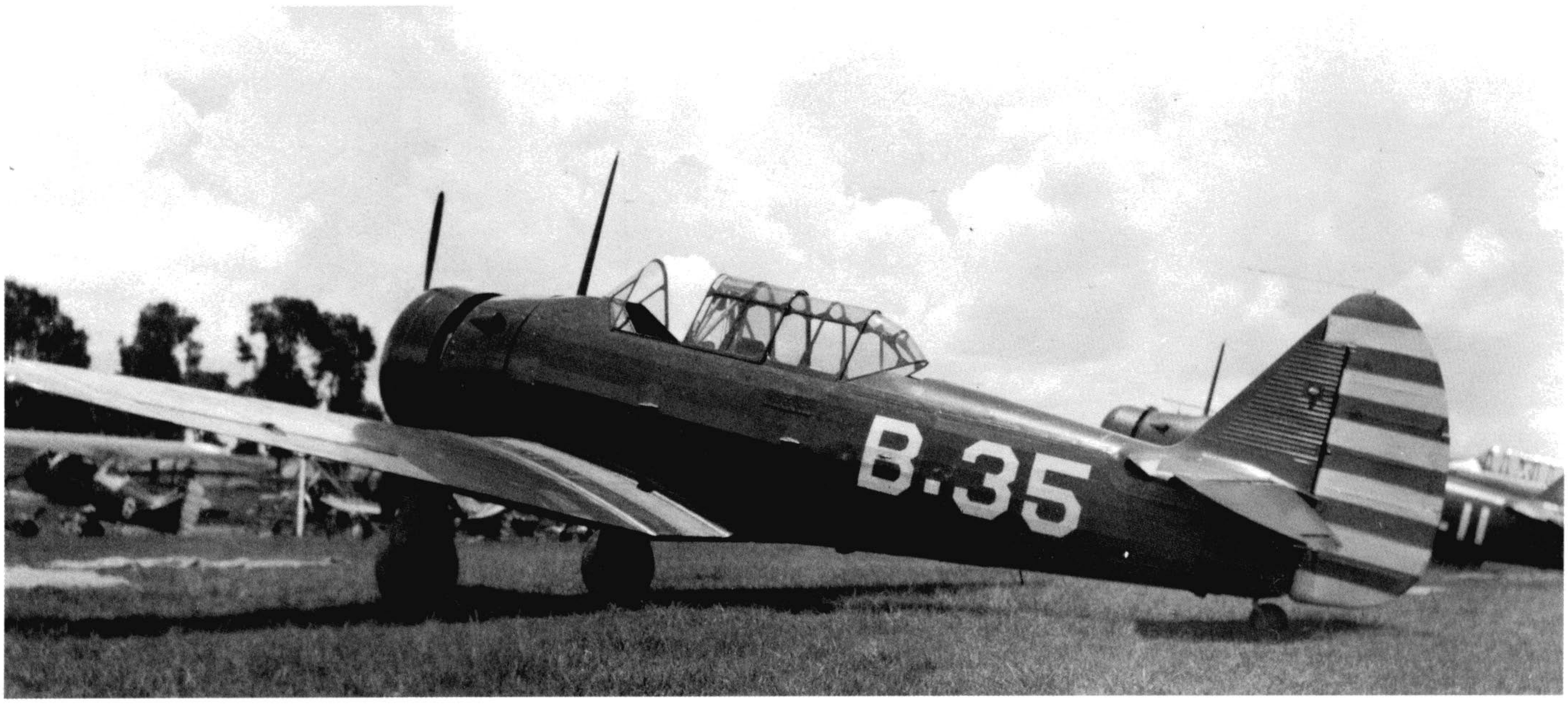
In 1935 a group of CAF officers headed by General Mao Pang-ch'u (P T Mow) had visited the United States and in March 1939 an American officer was invited to make a return visit the CAF. This was arranged in June 1939. By that time General Mao, for a period commander of the Kunming Training Centre, had just replaced General Chien as Chairman of the Commission on Aeronautical Affairs at Chengtu.

On 8 June a captured "Japanese bomber of Italian make", almost certainly a Fiat BR 20, was inspected. It had made a forced landing on an island in the river, had been repaired and flown to Chengtu and was now being overhauled. A large Tupolev TB-3 was being rebuilt for the transport role after a crash. There was a Bombardment Training School without aircraft and a Mechanics School. The NCO Flying School was at Taipingsze, a large aerodrome about 5 km south-west of the city. There were no hangars and no buildings on the field and all repairs were being done in the open. The school had Fleet, Douglas and Corsair aircraft and "Chinese copies of the same". There were 340 students and 400 mechanics. A gunnery school about 35 miles south-west of Chengtu had eight North American and Vultee aircraft.

A Pursuit Group (less two squadrons away on missions), one squadron of I-15s and one of I-16, was based at Chengtu, and in addition there was a bombardment squadron composed of 12 Tupolev SBs. Chiang Kai-shek had several aircraft available for his personal use: a Beech at Chungking, and a DC-2 and a Sikorsky at Kunming.

Soviet Aircraft and Personnel in 1939-40

The second contract of the second Chinese-Soviet credit agreement was signed on 20 June 1939 and called for the delivery of 24 Ilyushin DB-3 twin-engined bombers, 36 Tupolev SBs, 30 Polikarpov I-15bis, 30 Polikarpov I-16s, 83 spare engines, spare parts, etc. The aircraft were delivered by air from 25 June to 1 September 1939. A third credit agreement was signed on 13 June 1939, but the first contract covered by this agreement and dated 20 June 1939 only



A total of 100 North American NA-16 trainers of two different variants were delivered to the CAF in 1938-39.

CAF Training 1941-42

By May 1941 there were 124 primary, 123 basic and 114 advanced students at Chengtu. The first class had graduated in February 1941. There was a Mechanics School with about 500 student mechanics and an Air Corps Staff School, organised in December 1940, with 47 officer students. Five of the instructors were Russians. The Advanced School for cadet officers at Kunming had eight NA-16s, three Hawk IIIs and four Ryans. Colonel Wang Tsu-ming was commander. By October 1942 the NCO Pilots School at Chengtu had at least 14 Fleets, 12 North American NA-16s, 10 I-15s, two two-seat I-16s (UTI-4s), four SBs and two Hawk IIIs. By November 1942 Lt-Col Liu Chiung-kuang commanded the Chengtu school.

included bombs, ammunition, machine guns, cannon, trucks, etc, and no aircraft.

In 1939 two squadrons, one of I-16s and one of I-15bis, were formed with Russian pilots at Chungking. The aircraft were transported on lorries to Hami and flown from there after assembly. Thirty I-16s arrived at Lanchow on 3 August 1939.

The first group of 12 DB-3s, commanded by G A Kulishenko, flew from Moscow to Alma-Ata in June 1939 and then continued to Lanchow and Chengtu. A second group of 12 DB-3s was headed by N A Kozlov and flew the same route at the end of the month. The DB-3s were based at Taipingssu, Chengtu, and the Russian crews participated in both operations and training of Chinese personnel. In addition training of Chinese SB crews had started at Chengtu in the spring of 1939. The DB-3s were handed over to the 10th and 14th Squadrons of the 8th Group, the 10th Squadron being operational with the DB-3 from February 1940. The last 11 aircraft were handed over to the 6th Squadron in May 1940.

In August 1939 a new aviation school was established by the Russians at Kuldsha (same as Ili and Ining) in Sinkiang, about 35 miles from the Soviet border and 22 Russian instructors were sent initially. The aircraft for the school were formally ordered on 11 January 1940 and included 15 Yakovlev UT-2 two-seat trainers, eight Polikarpov I-16s, four Polikarpov UTI-4s, eight Polikarpov I-15bis, 10 Tupolev SBs and eight Neman R-10s. The R-10 was a two-seat reconnaissance and light bombing monoplane. Eleven spare engines, cars, buses and trucks were also ordered. Deliveries made to China between December 1940 and June 1941 included an additional pair of UT-2s, two UTI-4s, 21 spare engines, ammunition and fuel for the aviation school.

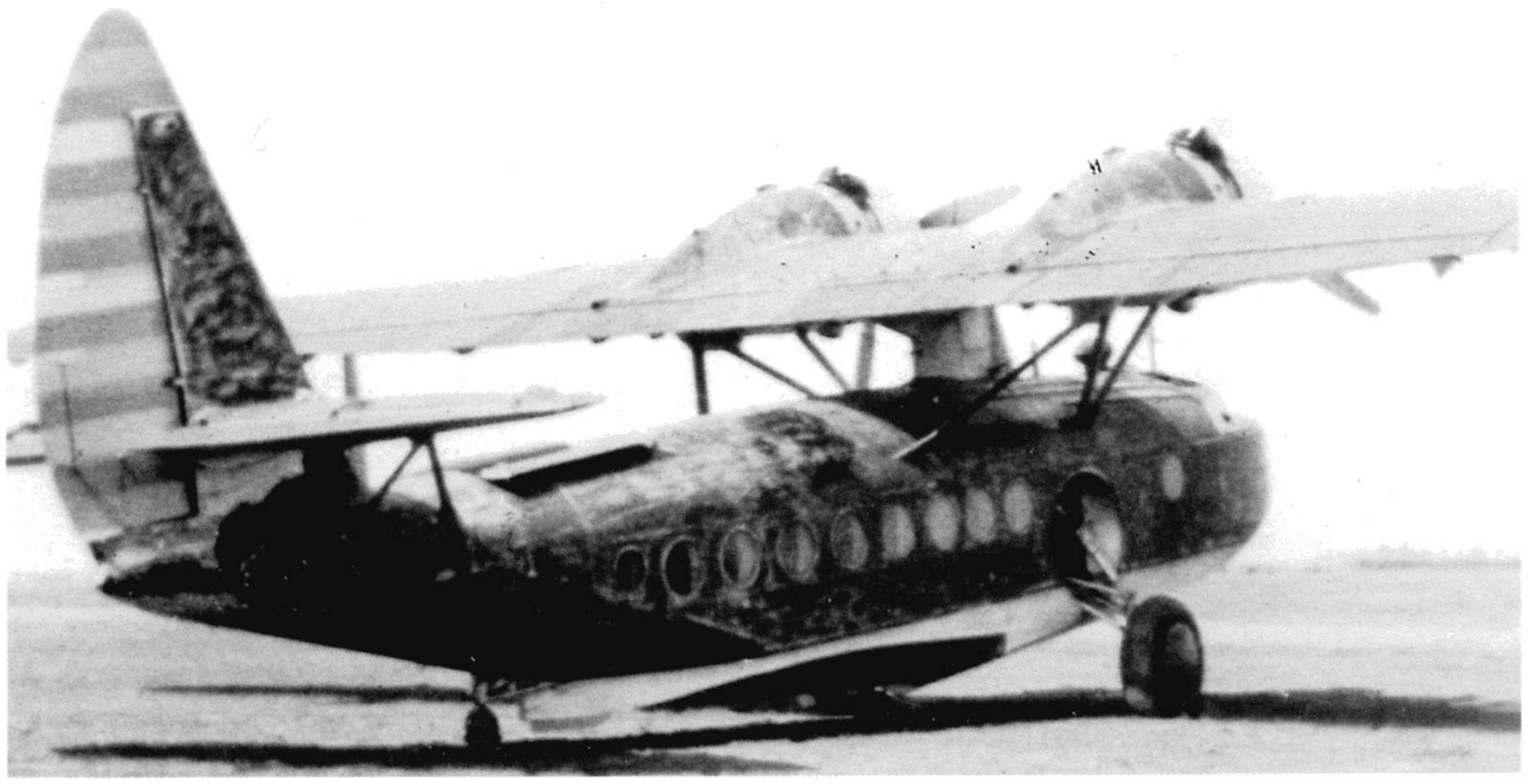
When the class first arrived at Kuldsha there were no aircraft. Some were soon delivered, but then there was no fuel and no oil and a Chinese mission had to be sent to Moscow to negotiate the matter of aviation supplies. The weather at Kuldsha was clear and dry between April and November and was excellent for flying. Two aerodromes were used, one 1.5 miles north of the city was for fighter training and the other about 5 miles north-west of the city for bomber training. By June 1940 there were 42 Russian instructors and five Chinese and by September the same year this had increased to 22 Russians and 13 others (Chinese). The commander was Russian. There were six I-15s and I-16s, six NA-16s, 16 old Avians and Moths, five Douglas O-2MCs and about 20 UT-2s. By 1941 the school was designated the Air College and by 1943 it was known as the CAF Tactical Training Unit.

Several Chinese students were sent to the Soviet Union for training and by the summer of 1939 1,045 Chinese pilots, 81 navigators, 198 wireless operators and 8,354 mechanics had received training there. In 1940 the Russian group of aviation adviser to China included P N Anisimov and V A Kartakov (bombers), and S P Suprun (fighters). Suprun was stationed at Chungking, where he had two fighter squadrons under his command.

On 16 December 1940 an order was issued to form a new Group, the 12th, with the 45th, 46th and 47th Squadrons equipped with the SB. The group did not receive their allotment of 14 old and three new version SBs until March 1941, however.

American Aircraft

No American combat aircraft were delivered to China in 1938-39 and only a few arrived in 1940. A Curtiss CW-21 single-seat fighter had been sent out to China as a demonstrator late in 1938. It reached Rangoon on 24 January 1939 and arrived at CAMCO, Loiwing, on 28 February. After assembly it was demonstrated by Curtiss-Wright



One of the two Sikorsky S-43W amphibians acquired by CNAC was transferred to the CAF for VIP transport.

CAF organisation, October 1940

1st Group (Bombardment) - 1st, 2nd and 4th Squadrons
2nd Group (Bombardment) - 9th, 11th and 30th Squadrons
3rd Group (Pursuit) - 7th, 8th, 28th and 32nd Squadrons
4th Group (Pursuit) - 21st, 22nd, 23rd and 24th Squadrons
5th Group (Pursuit) - 17th, 26th, 27th and 29th Squadrons
6th Group (Bombardment) - 13th, 19th and 31st Squadrons
8th Group (Bombardment) - 6th, 10th and 14th Squadrons

Separate squadrons: 12th (Observation), 15th (Pursuit), 18th (Pursuit), 25th (Pursuit) and 34th (Pursuit)

Training Units: 7th Group and the 20th Squadron

pilot Robert Fausel in Nanking in March and at Chengtu later in 1939. Delivery of 70 CW-21s was offered, but the contract signed on 31 May covered three complete aircraft and 27 sets of components and the demonstrator was purchased as well.

The three CW-21s were shipped in May 1940 and were assembled and test-flown at Rangoon. They were attached to the American Volunteer Group (AVG) and were to proceed to Kunming in December 1941. All were lost on the ferry flight from Laisho, however. Two of those built from components were almost ready at CAMCO, but due to the evacuation of the factory to India in 1942 none was ever completed and flown.

A Curtiss H-75Q demonstrator arrived at Rangoon on board SS "Worcestershire" on 16 January 1939 and after assembly at Loiwing it was test-flown on 11 February. It was then demonstrated by Arthur McEwan at Kunming, Chengtu and Chungking in February and March and was eventually purchased. Comparison flights against the I-15bis and I-16 were made and the aircraft was also flown by George Weigle, who crashed it on 5 May. In March an offer had been made for 100 complete H-75A-5s and 50 component sets for CAMCO, and a contract, probably for one complete aircraft and 49 component sets, was signed on 22 June 1939[33]. These aircraft never reached China and some were instead diverted to the RAF as Mohawk IVs. Engines, landing gear and centre sections were shipped complete for both the CW-21 and H-75A, the rest of the aircraft was in the form of pre-fabricated materials.

A L Patterson, representative of the China Airmotive Company, New York, and Consolidated Trading Company, Hong Kong, secured a contract with H H Kung for 50 single-seat Seversky EP-1 (P-35) fighters and four Seversky TP-C

33 According to one source the contract was signed on 31 May 1939 and was for one complete H-75A-5 and 54 sets of parts and materials.

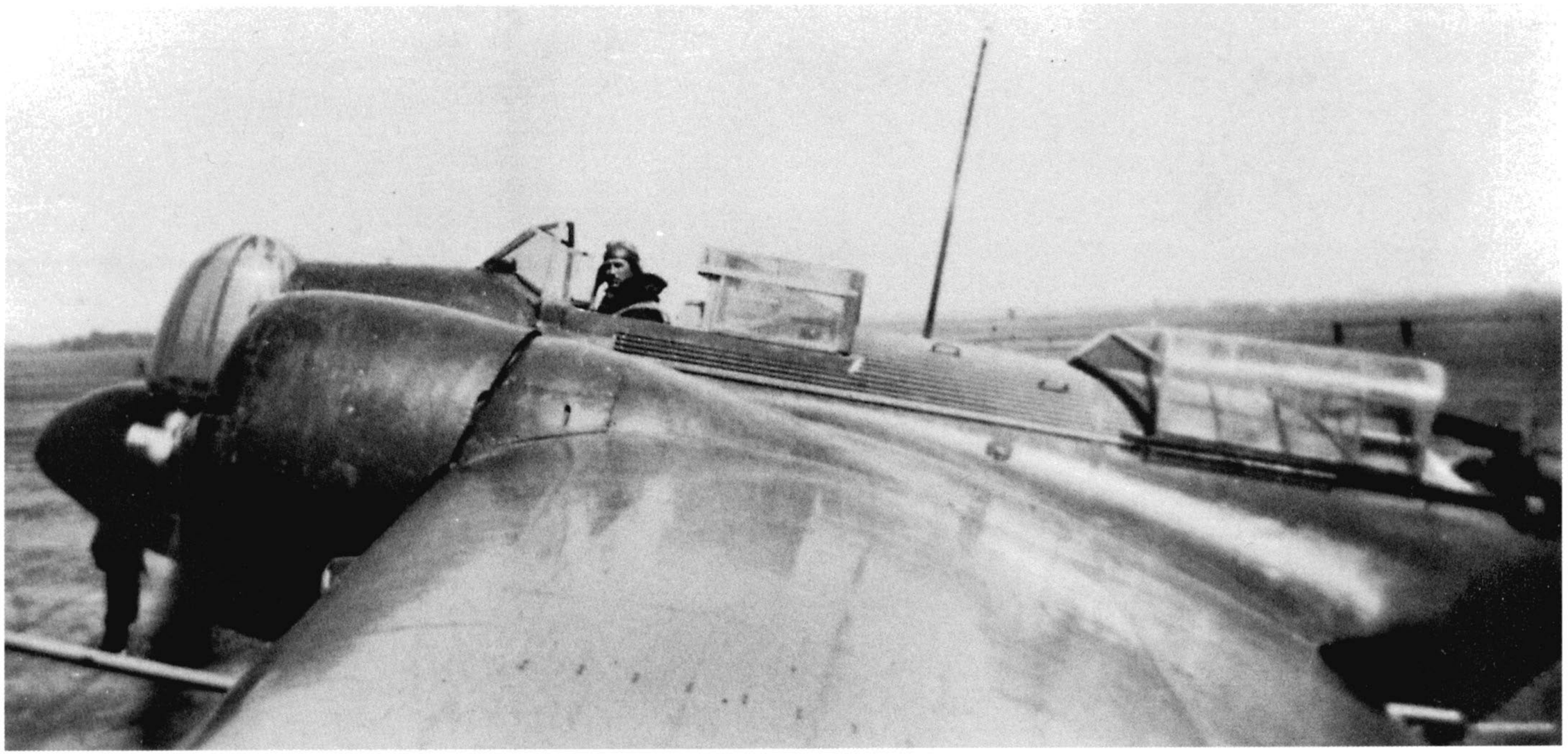
"Notes on Chinese Aviation"

In April 1941 Major F J McQuillen, American Assistant Naval Attaché to China, wrote a report on the CAF. It was prepared from various information, including that obtained from an American-born Chinese pilot stationed at Chengtu. He had been training for three years at Liuchow, Kunming (Basic School), Lanchow (training on I-15s and I-16s and advanced trainers), Kuldsha (for 1.5 yr) and Chengtu. He arrived at Chengtu in late February 1941 and was assigned to the pursuit group there.

According to Chinese press, four Japanese aircraft had been shot down over Chengtu on 14 March 1941, and two more were said to have been forced down on their return trip to Ichang. Nothing was mentioned about Chinese losses. On the day of the air fight the CAF pilot was at a field 10 miles south of Chengtu, where the pursuit squadrons were stationed, including the one to which he was assigned. He had not yet been checked out on the new I-153. There were 31 of these aircraft at the field and these took off in units of three when it became apparent that the Japanese were coming to Chengtu. The last fighter took off about 20 minutes before the Japanese arrived.

The Japanese formation consisted of 12 Zero fighters accompanied by a reconnaissance aircraft. They formed a circle and then strafed the airfield borders with machine gun and cannon fire. Two old aircraft were hit and set on fire and the radio shack was hit and the operator killed. When the Chinese fighters began to return the Zeros had reformed over the field at considerable altitude. As radio communication was interrupted, the Chinese pilots were looking for panel signals on the airfield and were flying much lower than the Japanese. The Japanese attacked them and the Chinese aircraft scattered. The Japanese operated in pairs and avoided individual dogfights with the more maneuverable I-153 biplanes. As the numerically superior Chinese arrived back at the field in units of three, the Japanese were able to deal with them in turn. The combat lasted for more than half an hour until the remaining Chinese I-153s had fled the scene and the Japanese returned to Ichang.

In addition to the two old aircraft destroyed on the ground, a total of 15 new I-153s were lost! Eight pilots had been killed, including two American-Chinese, who were classed among the best of the CAF. No Japanese aircraft was shot down, but one was said to have been brought down in a collision with an I-153. No wreckage was found, however. General P H Whang, in charge of aerial operations in the Chengtu area, was summarily relieved of command as a result of the combat. Most of the surviving pilots blamed their troubles on the machine guns, which were prone to jamming.



Martin M-139WC.

observation aircraft on 25 March 1939. They were to be shipped to Rangoon, but the order was cancelled in May in connection with the Curtiss fighter order. Patterson managed as well to sell 50 Ryan STM-2 and 20 STC-P4 two-seat trainers, which were ordered at the same time. That last-mentioned 20 aircraft were never delivered, but the 50 STM-2s were shipped from the USA and reached Rangoon. However, Great Britain did not permit their assembly in Burma.

On 18 April 1939 another 50 North American NA-16s were ordered from the Consolidated Trading Company. Harvey Greenlaw, representative of North American Aviation, Inc, arrived at Rangoon in June 1940 to arrange for the assembly of both the NA-16s and the Ryans, but soon found out that assembly at Lashio in Burma was refused by the Burmese Government. In addition to the Seversky and Ryan aircraft, China Airmotive and Consolidated Trading (A L Patterson) had sold 25 Vought V-156 two-seat dive-bombers, and spares, but this contract was cancelled. An order was also placed for about 100 of the not yet completed White PY-7 two-seat trainer, but these aircraft were never built.

SS "Silver Maple" arrived at Rangoon with 14 NA-16s and 20 Ryans on 1 July 1940. The Ryans remained in their crates at Rangoon for some time, but were then taken to Loiwing, where the CAMCO factory managed to assemble most of them in 1940. When the Japanese bombed CAMCO in October 1940 two Ryans in final assembly and on the runway were completely destroyed and seven others were damaged. Two of these were repairable, but the others had to be reduced to spare parts.

China ordered six Beechcraft M-18R (or AT18R) light twin-engine bombers in February 1940 and the first example was delivered on 30 September. A Beech 18, possibly one of the six M-18Rs, was registered as XY-AAL to the Inter-Continent Corporation for special flights to Burma in 1941. Three Vultee V-1A passenger transports were acquired on 3 February 1940 and one of these was registered in Burma as XY-AAF, while two were transferred to CNAC.

The last type sold to China before the USA entered the war against Japan was the Vultee V-12-C, a single-engined two-seat bomber, of which 26 were ordered on 25 March 1940. The first one was damaged in the USA in January 1941 and was not delivered, but the other 25 were shipped in 1940 as component sets for assembly by CAMCO at Loiwing. A new order for 52 V-12-Ds was signed, probably in June 1939. One pattern aircraft was shipped in 1940 and was followed by 51 as parts sets. Only a few were completed after the CAMCO factory moved to India in 1941 and it seems that none reached China.

Summing up, out of about 750 American aircraft ordered in 1938-41 only about 370, most of them trainers, were received by China. During the same period the Soviet Union supplied more than 1,000 fighters and bombers.

Training

By March 1940 the NCO Pilots School (Flight Training School for Non-Commissioned Officers) at Chengtu had been in existence for little over one year. About 400 students in three classes were in training and the first class of 60 was due for graduation in August 1940. The instructors were all Chinese. Primary training was done on Fleets, basic and advanced training on I-15s and SBs and the school had about 27 Fleets, 24 SBs, 22 I-15s and 24 I-16s. At the civil aerodrome 5 miles north of the city were another five I-15s, five I-16s, four SBs and several other aircraft, including the captured Fiat BR 20 mentioned earlier.

The Military (Primary) Aviation School was located at an aerodrome near Yunnanyi on the Yünnan-Burma Highway, 327 km west of Kunming and 2 km east of the

town of Yunnanyi. There was another field 2 miles north of the town and a third aerodrome was maintained at Chu Hsiung, 192 km west of Kunming, until February 1940 when it was abandoned. By April 1940 the school had six hangars, each capable of accommodating 15 Fleet trainers and the repair shop was in the town. There were 100 Fleet trainers and one old Corsair. Thirty of the Fleets had arrived between November 1939 and April 1940 and 30 in the spring of 1938. Colonel S D Chiang, an ex-Hangchow school instructor, was Commanding Officer. There were 42 Chinese and four American instructors (H R Mull, who left for home in June 1940, C D Adair, L G Heston and J L Preston) and 191 students. Since the closing of the Burma Road it was difficult to obtain fuel for the Yünnanfu school.

Students were normally flown up to the CAF Tactical Training Unit at Ining (Kuldsha) in one of the CAF's two Douglas C-47s. By July 1943 this school had about 150 students, which had graduated from the NCO pilot training course at Chengtu. There were 14 Russian advisers, including four flying instructors, and at least 14 Chinese instructors and Lieutenant-Colonel Ning was Commander. There were at least two I-15s, eight I-16s, three R-10s, eight UT-2s and a single NA-16, and the fuselages of about six crashed I-16s were used for demonstrations. In addition there were 12 SBs, including three USBs with an additional instructor's cockpit in front of the pilot's seat.

The only CAF glider school was located at Fonghuangshan airfield, about 2 miles north of Chengtu. It was opened in 1940, but by December 1942 only one class of 30 students had graduated. Although they wore military uniforms, the students remained civilians and were not enlisted in the CAF, but some of them went on to a CAF flying school afterwards. By December 1942 there were 40 students, of which 15 were girls. Training started with rubber shock cord take-offs and later the gliders were towed by Fleet trainers. The school had 15 gliders of varying types, all high-wing fabric-covered monoplanes with enclosed cabins, including one German glider. They were being built at Kweilin, Chihkiang (Hunan) and Chengtu.

By October 1940 the Commission on Aeronautical Affairs consisted of Generals C J Chow, K Y Wong and P T Mow (Mao), with a Secretariat including foreign advisers, and subdivisions for Training, Air Defence, Operations, Field Construction, Technical, Personnel, Finance, Transportation and Accounting. The CAF had four bombardment groups, three pursuit groups, five detached squadrons, a training pool (one group and one squadron) and two schools. Theoretically there were 29 combat squadrons. A pursuit squadron was to have a normal strength of twelve aircraft, a bombardment squadron nine.

On 20 October 1940 there were only 73 serviceable military aircraft and these comprised 16 SB bombers, 15 DB bombers, one Vultee V-12, 23 I-15s, five I-16s, three Hawk 75s, six Hawk IIIs, two D 510s and two Gladiators. 172 aircraft were under repair. There were 139 trainers (mostly Fleets), plus 183 under repair and 50 Ryans and 50 North American NA-16s being assembled at Loiwing. A Chinese Mission under Mao was in the USA and intended to purchase 350 new fighters and 150 bombers. When he returned in April 1941, Mao was been placed in charge of CAF operations.

Aircraft, Units and Personnel of the CAF, November 1941
Units and Stations (Aircraft in good condition)

1st Bombardment Group, Wenkiang
HQ Squadron (8 SBs), 1st Squadron (2 SBs at Taipingssu)
3rd Pursuit Group, Shuangliu
HQ Squadron (5 SBs), 7th Squadron (1 I-15), 8th Squadron (1 Hawk 75), 28th Squadron (1 Fleet)
4th Pursuit Group, Shuangliu
HQ Squadron (7 I-153s), 21st Squadron (7 I-16s), 23rd Squadron (2 I-15s), 22nd Squadron (half, 1 I-16)
5th Pursuit Group, Shuangliu
HQ Squadron (3 I-153s), 17th Squadron (4 I-16s), 27th Squadron (1 Gladiator), 29th Squadron (2 I-15s), 26th Squadron (1 I-16)
11th Pursuit Group, Chunglai
HQ Squadron (3 I-15s), 22nd Squadron (half, 1 I-15), 41st Squadron (2 I-15s), 42nd Squadron (1 I-16), 43rd Squadron (1 Fleet), 44th Squadron (1 I-16)
2nd Bombardment Group, Taipingssu
HQ Squadron (8 SBs), 9th Squadron (1 SB)
6th Bombardment Group
HQ Squadron (4 SBs at Wenkiang), 13th Squadron (7 SBs at Chiayukuan)
8th Bombardment Group
HQ Squadron (3 SBs), 6th Squadron (1 SB), 10th Squadron (1 Fleet)
12th Bombardment Group, Chunglai
HQ Squadron (4 SBs), 45th Squadron (1 Curtiss)
Transport Group, Fenghuangshan: 1 Beech 18, 3 Beech D17Rs
Bombardment Group, Fenghuangshan: 7 SBs, 5 Curtiss, 1 Douglas, 1 North American NA-16, 1 Beech 18
Training Unit, Ining: 10 SBs, 8 I-15s, 12 I-16s, 8 R-10s, 13 Corsairs
12th Group, Hsintsin: 1 SB, 3 NA-16s
Squadrons without aircraft: 2nd, 4th, 11th, 14th, 24th, 30th, 46th and 47th
Cadet and NCO School: 36 Fleet, 2 Douglas, 13 Hawks, 4 I-15s, 24 NA-16s, 21 Ryans, 2 Bellancas, 1 unidentified, 1 Stinson

Personnel

	Pilots	Observers	Ground	Total
Officers	770	207	306	1,283
Men	108		1,005	1,113

In training: 427 Officer aspirant cadets, 769 Non-commissioned cadets, 316 Enlisted, in total 1,512

Soviet Aviators Recalled in 1941
Only 89 combat aircraft were serviceable at the end of 1940

Curtiss Hawks lined up. (Wings of China)

and after prolonged negotiations the USSR agreed to deliver 75 I-153s, 75 I-16s (a version called the "E-16-3" by the CAF) and 100 SB bombers. The I-153 was a version of the I-15 with retractable undercarriage. Delivery at Hami began in January and was completed in May 1941. Seven of the SBs arrived at Chengtu with 30 I-15s on 15 January 1941. Several I-16s were lost en route from Hami, however. These aircraft were included in two consignments of Soviet aircraft delivered to China without any formal orders between 25 November 1940 and June 1941 and contracts were signed retroactively only in March 1945.

The first of these consignments included 100 Tupolev SBs, 65 Polikarpov I-16s, 9 Polikarpov I-15s (probably I-15bis), 76 Polikarpov I-153s, spare parts, bombs, fuel, trucks, tractors, arms and ammunition, and the second consisted of two Yakovlev UT-2s and two Polikarpov UTI-4s, 21 spare engines, ammunition and fuel, all for the Kuldsha aviation school.

From early 1941 a new version of the SB with the M-103 engine had been delivered (called the "SB-III" in China). The first of these were taken over at Hami by the 1st Group in January 1941. The 1st Squadron used both old and new SBs, the 2nd Squadron had only those of the new version. Thirty new SBs were taken on charge at Hami by the 6th Group in March and the last SB bombers were handed over in June 1941.

At the beginning of 1940 Chiang Kai-shek decided to stop supplies to the Communist-led 4th and 8th Armies. Soviet military aid was reduced as a response to this and with the German attack on the Soviet Union in June 1941 all deliveries to China of armaments were stopped. Advisers and other personnel were recalled. During the period 1937-41 more than 200 Russian aviators had been killed in China and fourteen were awarded the distinction Hero of the Soviet Union.

American Air Mission

On 17 May 1941 an American Air Mission consisting of Brigadier General Clagett, Colonel George and Commander McDonnell, arrived in Chungking to investigate the status of the CAF. It remained in China until 6 June, making a detailed inspection of Air Force activities and installations in and around Chungking, Chengtu and Kunming. Many aerodromes and the factory at Loiwing were visited and the Mission was also allowed to study and make notes from a number of secret documents.

According to their report, the CAF had five bombardment groups with 338 pilots and four fighter groups with 276 pilots. In addition there were 21 pilots assigned to reconnaissance units. Most of the CAF was centred on Chengtu, where the operational headquarters was, and Lanchow. The 3rd, 4th, 5th and 11th Pursuit Groups and the 1st, 2nd and 12th Bombardment Groups were stationed at fields near Chengtu[34].

Brigadier-General Chou Chih-jou was Acting Chief of the CAF, Chiang Kai-shek being the formal Chief. Brigadier-General Mao Pang-ch'u was the real head of the air force as Director of Operations. He had been appointed to this post after the 14 March debacle. Many units were not yet completely equipped. They were checking out their pilots on the newly arrived Soviet aircraft and tried to avoid combat with the Japanese. On 27 May the CAF suffered another great loss. A Chinese pursuit group gave combat to a group of Japanese fighters approaching Tienshui in Kansu. After a short skirmish the Japanese seemed to withdraw, but when the Chinese landed to refuel, the Japanese suddenly returned and strafed the aircraft on the field. Eighteen Chinese fighters were damaged, many irreparably.

34 The 11th Pursuit Group and 12 Bombardment Group had a single Curtiss H-75, 15 I-15s, 3 I-16s and 6 SBs in total.

Curtiss H75 Hawk being refuelled and serviced.

There were several aerodromes around Chengtu: Taipingssu, training field for the NCO Flying School and home station for one bomb group, Shuangliu, home station for two pursuit groups[35], Fanghuangshan, commercial field, Wenkiang, home station of one bomb group, and Hsinshing, constructed since December 1940 as a heavy bomber base. Many aerodromes were visited and inspected by the Americans who were flown around by Royal Leonard in a CNAC DC-2. The CAF was found to have a widespread net of airfields covering Free China. Many were in excellent condition and large enough to accommodate medium bombardment aircraft in considerable numbers. Each field had a small maintenance and communication force and could easily be transformed into operating bases in a relatively short time.

Chinese plans envisaged a new air force with an expected 100 American pilots and 250 mechanics, technicians, etc, to be stationed initially at Yunnanyi, Yünnan, for the protection of the Burma Road with new Lend-Lease aircraft. 36 Curtiss P-40s were being assembled at Rangoon and another 64 were expected. As more planes became available and the air force expanded, aerial operations were to move eastwards to cover Kunming, northward to cover Szechwan and finally to the south-east to harass the Japanese along the Yangtze, in Formosa, in Canton and on Hainan Island. The north-west was to be left to the Russian advised section of the air force. The Mission suggested that 25 Chinese heavy bomber crews be trained in the USA and that medium bomber and fighter pilots be trained in the Philippines.

CAF first-line strength on 1 June 1941 was 44 I-153s, 45 I-16s (E-16-3s), 70 SBs and 89 old types. In July 1941 the Burma Volunteer Air Force received a message that Chiang Kai-shek had decided to release two North American NA-16 trainers to Burma, probably as a gesture to show gratitude for the rights to transport aircraft to China through Burma and RAF/BVAF personnel collected the aircraft in Kunming in October 1941. In addition, the Inter-Continent Corporation (CAMCO) sold a two-seat Curtiss CW-22 Falcon, which they had probably imported for demonstration purposes, to the Burma Volunteer Air Force in July 1941[36].

The American Volunteer Group (AVG)

In October 1940 Claire Chennault visited the USA, accompanied by General Mao. Their plans were to obtain modern aircraft and American pilots for China. Great Britain was willing to release 100 Curtiss H 81-A2 Hawks, which were to have been completed for them as Tomahawk IIBs and these aircraft were purchased through the Universal Trading Company and were billed to the Chinese Government on 6 January 1941. On 15 April 1941 President Roosevelt signed an unpublicised executive order authorising recruitment of American personnel for the "American Volunteer Group" (AVG), which was later to became known as the "Flying Tigers".

Because of existing neutrality regulations the whole operation was organised as a commercial undertaking under the auspices of the Inter-Continent Corporation and CAMCO. Pilots and mechanics, which were contracted to CAMCO to "manufacture, repair and operate aircraft", were mercenaries and were in no way connected with the US armed forces. A total of 110 pilots, eight medical and 54 administrative personnel, 138 mechanics and five engineering helpers were hired and sailed from San Francisco on 7 July. They arrived at Rangoon on 28 July.

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35 By October 1941 the 5th Pursuit Group was stationed at Shuangliu with 27 I-15, of which 19 were left, and I-16s.

36 These aircraft received BVAF serials Z-31 and Z-32, and Z-30, respectively.

Preparing for take-off on a mission: Curtiss Hawks and Curtiss Shrikes.

Training was to take place at Kyedaw, near Toungoo, some 275 km north of Rangoon in Burma. The Hawks, which were called P-40s by the AVG, began to arrive at Rangoon in May 1941, where Walter E Pentecost supervised the assembly. The first batch of 35 fighters had sailed on 19 February 1941. Ninety Chinese mechanics and a number of American foremen came down from CAMCO at Loiwing to Mingaladon airfield, near Rangoon, to assemble the aircraft, which were then flown up to Kyedaw.

The first machine was test flown on 1 August and arrived at Kyedaw on 3 August, and by 28 November the 99th aircraft had been completed and delivered. One machine, P-8194, had been cannibalised for parts. At least half of the pilots had never flown a P-40 before and a substantial number were not even fighter pilots. Training attrition soon reached serious proportions and at least a dozen P-40s were destroyed in accidents before the end of 1941. As already mentioned, three Curtiss CW-21 fighters were delivered to the AVG as well, but these were all lost during the flight to China in December 1941.

War damage. Curtiss Hawk III 2503.

Aircraft of the Nanking Air Force (CAF) 1927-1941

Type	Quantity	Year	Remarks
Curtiss JN-4D Jenny	>2	1927	Ex-Canton
R-1 (DH 9A)	>3	1927	Ex-Canton
Breguet 14A2	2	1927	Ex-Canton (Captured from Sun Ch'uan-Fang)
Caudron C 59	6	1927	Ex-Canton (Captured from Sun Ch'uan-Fang), 1 built locally
Schreck FBA 17HMT2	3	1927	Ex-Canton (Captured from Sun Ch'uan-Fang)
Morane-Saulnier AR 35EP2	1	1927	Ex-Canton (Captured from Sun Ch'uan-Fang)
Junkers K 53	11	1929	Including 1 ex-Szechwan
Junkers F 13	2	1929	One more lost during delivery in 1931
Focke-Wulf S 24 Kiebitz	20	1929	
Raab-Katzenstein RK 2b Pelikan	6	1929	
Potez 25	5	1929	Including 1 ex-Manchuria
Potez 33	2	1929	
Curtiss Robin B/C/B-1	3	1929	
Curtiss Falcon	1	1929	
Ireland Amphibian N-2	1	1929	
Stinson SM-1F Detroiter	6	1929	Ministry of Communications. To CNAC in 1930
Ryan B-1 Brougham	5	1929	Ex-Hankow (civil)
DH 60 Moth	37-40	1929	Including 4 ex-Hankow (civil) 1929, 4 ex-Honan 1930, 6 ex-Shansi 1930, and 1 ex-Hunan 1934
Curtiss Fledgling	5 (?)	1929	
Vought O2U-1D Corsair	34-40	1930	Including 2 from Hunan in 1932
Douglas O-2MC	>150	1930	Including ca 5 ex-Canton 1936. 77 from the USA, about 5 ex-Canton and at least 68 from CAMCO production
Stinson SM-2 Junior	2	1930	Ministry of Communications first
BFW M 18d	1	1930	Aero Survey
Junkers W 33	3	1930	Ex-Honan. To Aero Survey
BFW U 12 Flamingo	1	1930	Ex-Shansi
BFW M 23	1 (?)	1930	Ex-Shansi
Junkers K 47	11	1931	Including 3 ex-Canton
Sikorsky S-38B	2	1931	
Ford Tri-Motor	4	1931	2 used by Chang Hsueh-liang (1 ex-Manchuria)
Blackburn Lincock III	3	1931	
DH 80A Puss Moth	2	1932	Including 1 ex-Hunan
Boeing 218	1	1932	
Fleet Model 10	130	1932	Ex-Canton aircraft in addition
Armstrong Witworth AW 16	9	1932	Including 3 ex-Kwangsi in 1937
Fiat BR 3	23 (24)	1932	
Curtiss Hawk I	32	1933	Additional ex-Canton aircraft in 1936
Vought V-65C Corsair	42 (?)	1933	Additional aircraft ex-Canton in 1936
Fiat CR 30	1	1933	
Caproni Ca 101	1	1933	
Breda Ba 25	20	1934	
Caproni Ca 111/Ca 111RC	8	1934	
Curtiss BT-32 Condor	1	1934	
Northrop 2E Gamma	49	1934	
Boeing 247D/Y	2	1934	
Waco MNF	5 (?)	1934	One used by Chang Hsueh-liang
Breguet 273	10	1934	
Avro 631 Cadet	6	1934	Including 5 ex-Kwangsi in 1937
Avro 626 and 637	10	1934	Including 9 ex-Kwangsi in 1937
DH 60T Moth Trainer	6	1934	Ex-Hunan
Fairchild KR-34	2	1934	Ex-Hunan
Ryan B-5 Brougham	5	1934	2 ex-Hunan, 3 ex-Canton in 1936. One to Aero Survey
Java	1	1934	Built locally
Breda Ba 27M	9	1935	
Fiat CR 32	16	1935	
Savoia S 72	7	1935	
Vought V-92C Corsair	20	1935	
Cierva C 30A (Avro 671)	1	1935	
Junkers W 34	4	1935	Aero Survey

Junkers Ju 52/3m	1	1935	
Focke-Wulf FW 44F/J Stieglitz	19	1936	Ex-Canton
Focke-Wulf FW 58K-3	1	1936	Ex-Canton
Heinkel He 111A	6	1936	Ex-Canton
Armstrong Witworth Atlas	6	1936	4 ex-Canton, 2 ex-Kwangsi 1937
Avro Avian	>22	1936	>4 ex-Canton, 18 ex-Kwangsi 1937
Avro trainers	>10	1936	Ex-Canton
Arrow Sport	1	1936	Ex-Canton
Boeing 281	10	1936	Ex-Canton
Curtiss-Wright Travel Air	2	1936	Ex-Canton
Pitcairn PA-6 Mailwing	5	1936	Ex-Canton
Northrop 4A Alpha	2	1936	Ex-Canton
Stearman	6	1936	3 were ex-Canton Stearman LT-1 Bulls
Stinson Model O	3	1936	Ex-Canton
Waco CSO	4	1936	Ex-Canton
Fu-hsing AP-1	20	1936	Locally built. 1 ex-Canton
Douglas DC-2	2	1936	Including 1 ex-Canton. 1 used for a period by CNAC
Curtiss Hawk III	102	1936	Including 41 ex-Canton
Curtiss Shrike	20	1936	
Spartan C-4-301 and C-5-301	2	1936	One to Aero Survey
Breda Ba 28	18	1936?	
Suchow	1	1936	Built locally
Beech D-17R	11	1937	At least 1 to CNAC
Curtiss CW-19R	1	1937	
Curtiss H75H/M/Q Hawk	32	1937	
Martin M-139WC	9	1937	
Sikorsky S-43W	1	1937	Ex-CNAC
Spartan 7W-P1 Executive	2	1937	
Vultee V-11-G	30	1937	Ex-Canton order
Gloster Gladiator I	36	1937	
Polikarpov I-16	195	1937	
Polikarpov UTI-4	14	1937	
Tupolev SB	288	1937	
Tupolev TB-3	6	1937	
Potez 25		1937	Ex-Szechwan
Mitsubishi Type 92	6	1937	Ex-Kwangsi
Nakajima Type 91 Fighter	5	1937	Ex-Kwangsi
Nieuport ND 29 (Type Ko)	9	1937	Ex-Kwangsi
Avro 621	1	1937	Ex-Kwangsi
Airspeed AS-6J Envoy	2	1937	Ex-Kwangsi
Westland Wapiti	2	1937	Ex-Kwangsi
Savoia S 81B	3	1937	6 ordered
Breda Ba 65	30	—	Not delivered 1938
Fiat G 50	50	—	Not delivered 1938
Henschel Hs 123A-1	12	1938	
Dewoitine D 510C	24	1938	
DH 89A Dragon Rapide	6	1938	2 to CNAC
Bellanca 28-90A	20	1938	
North American NA-16-3C/4	100	1938	
Stinson SR-5 Reliant	(4)	1938	Ex-SWAC
Stinson SR-9D Reliant	(2)	1938	Ex-SWAC
Polikarpov I-15bis	389	1938	
Yakovlev UT-1	5	1938	
Yakovlev UT-2	17	1939	
Neman R-10	8	1939	
Ilyushin DB-3	24	1939	
Curtiss CW-21	1	1939	30 ordered, of which 3 crashed before delivery
Seversky EP-1	50	—	Cancelled 1939
Seversky T-PC	4	—	Cancelled 1939
Morane Saulnier MS 406C1	12	—	Not delivered 1939
Potez 631C3	4	—	Not delivered 1939
Potez 633B2	4	—	Not delivered 1939
Fiat BR 20	1	1939	Captured from Japanese

Polikarpov I-153	76	1940	
Beech M-18R	6	1940	
Ryan STM-2E/P	50	1940	
Vultee V-1A	3	1940	2 to CNAC and later 2 to CATC
Vultee V-12-C/D	78	1940	All were not delivered
White PT-7	(100)	—	Probably ordered, not delivered
Fleet Model 10	50	—	Ordered in 1939 but cancelled
Curtiss H75A-5	50	—	Ordered in 1939 but not delivered. To RAF
Curtiss H81-A2 Tomahawk	100	1941	
Mitsubishi A6M2 Zero	1	1941	Ceptured. Rebuilt and flown in 1942

Known Serial Numbers of Nanking Air Force Aircraft

F51	Douglas O-2MC
P-1 to P-10	Junkers K 47
X10, F53	Vought Corsair
6	Vought Corsair
No.7	Douglas O-2MC
13, 16, 27-30, 32, 33, 38	Vought Corsair
51-62	Douglas O-2MC-4
65, 67	Vought Corsair
101-106	DH 60 Moth
1, 5, 8, 12, 21, 27, 29, 31, 57, 60, 68, 103	Fleet
1-22-	Curtiss Hawk II
1-10	Boeing 281
1-3	Ford Tri-motor
B.1-39-	NA-16
NB1-NB20	Breda Ba 25
303	Dewoitine D 510
128-130, 132, 134, 137, 141	Vultee V-11
159	Vultee V-11
33, 39	Curtiss Hawk III
68, 72, 75, 88	Curtiss Hawk III
1-2	Northrop Alpha
-08-10	Curtiss Shrike
New system (1st digit indicating squadron)	
106	Fiat BR 3
118	Douglas O-2MC
207	Ryan Brougham
204, 205	Polikarpov I-15bis
-303-312	Douglas O-2MC
307	Ryan Brougham
305	Polikarpov I-15bis
401-410	Douglas O-2MC
501	Douglas O-2MC
501-508	Vought V-92C Corsair
605	Armstrong Witworth AW 16
606-608	Douglas O-2MC
601, 609, 610	Blackburn Lincock
618, 625	Stearman Bull
602, 605	Vought Corsair
601-608	Vought V-92C Corsair
701-702	Douglas O-2MC
704	Vought Corsair
701-709	Breda Ba 27
731	DH 60T Moth Trainer
801-812	Fiat CR 32
801	Heinkel He 111
901-909	Northrop Gamma
901-906	Caproni Ca 111
1001-1006	Savoia S 72
1101-1109	Northrop Gamma
1103-1104	Tupolev SB
12xx	Vought Corsair
1301-	Breguet 273
1305	Savoia S 81
1309	Spartan 7W-P1
1401-1412	Northrop Gamma
1402-1404	Martin M 139
1421, 1435	Vultee V-11
15xx	Douglas O-2MC
1501-1510	Henschel Hs 123
1601	Curtiss H75M
1606	Vought V-92C Corsair
1701-1707	Boeing 281
1801	Ford Tri-Motor
1902-1906	Heinkel He 111
2044, 2010	Douglas O-2MC
2101-2105	Curtiss Hawk II
2101-2109	Curtiss Hawk III
2104-2120	Polikarpov I-15bis
2107	Polikarpov I-16
2112	Fiat BR 3
2201-	Curtiss Hawk II
2201-2219-	Curtiss Hawk III
2301-	Curtiss Hawk II
2301-2310	Curtiss Hawk III
2305-2315	Polikarpov I-15bis
2401-2406	Curtiss Hawk II
2401-2409	Curtiss Hawk III
2405-2423	Polikarpov I-16
2501-2513	Curtiss Hawk III
2501	Curtiss H-75M
2601-2608	Curtiss Shrike
2604-2609	Polikarpov I-16
2701-2709	Curtiss Shrike
2701-2709	Polikarpov I-153
2801-2810	Curtiss Hawk II
2807	Curtiss Hawk III
2801-2814	Gloster Gladiator
2901-2917	Gloster Gladiator
2901-2911	Polikarpov I-15bis
3001-3003	Fu-hsing
3001-3006	Martin M-139
3012	Vought Corsair
3204-3010-	Gloster Gladiator
4001	Focke-Wulf FW 44
4101-4105	Dewoitine D 510

Chinese Naval Aviation

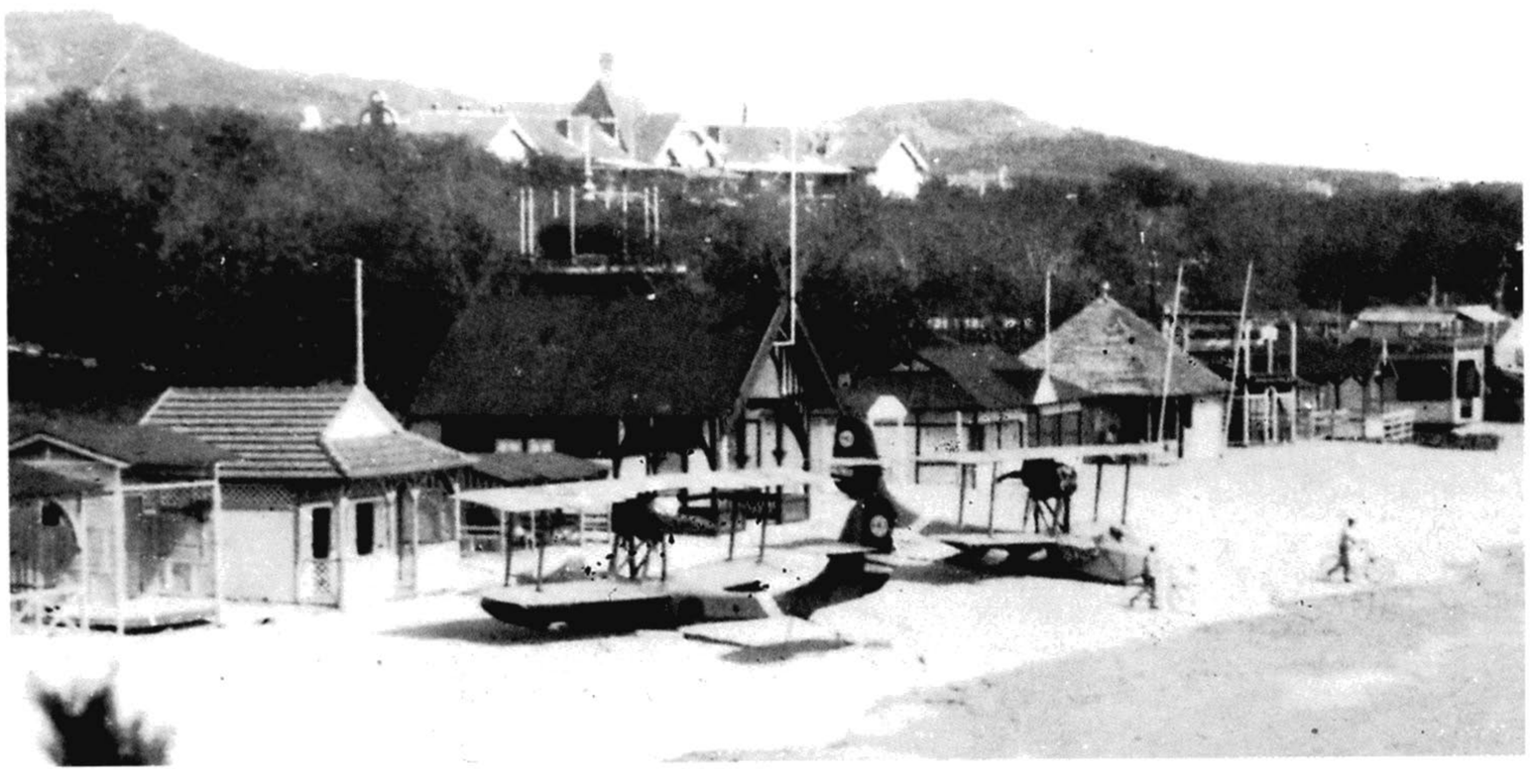
German pilot Bertram and Chinese Navy aviation personnel in front of one of the two Fuchow-built Chi trainers.

As already described the Chinese Navy was dominated by Nationalist officers and played only a minor role in the Chinese civil wars of the 1920s and 1930s. In March 1918 the Chinese Naval Board arranged theoretical aviation and submarine courses with 107 students at Fuchow Navy Yard and a few aircraft were built and used for instructional purposes. These included the Curtiss-engined Chia floatplane built by the Naval Air Establishment at Fuchow, which was completed in August 1919 but was not flown until February 1920. A second Chia was built in August 1920 and a third in February 1921. The I (Yee) type with Hall-Scott engine, also a floatplane, was built in 1921 and probably first flown in May. By October the Navy had built four aircraft, of which the first two had been wrecked. Two Ping type flying boats with Rolls-Royce Eagle engines were built and delivered in May 1924 and April 1925.

By March 1925 there were about 60 well trained mechanics and six naval officer student flyers, but no qualified pilots. They had one seaplane (100 hp Hall-Scott engine) at their disposition, and another was under repair. At the beginning of 1927 the Navy was reported to have four aircraft and two pilots at Fuchow and in that year three Wu floatplanes were built, two of them with Bristol Lucifer engines and one with an inline engine.

One squadron of the Navy had rejoined Wu P'ei-fu after the Second Chih-Feng War in 1924, but the rest under admiral Yang Shu-chuang, leader of the so-called "Fukien naval clique", had joined Sun Ch'uan-fang, who controlled the naval base areas. About March 1927 the Navy was reunited again when Yang defected to the KMT. Shanghai was taken by Chiang Kai-shek's forces on 22 March 1927 and this firmly placed the Navy under the new Nanking Government.

The Ministry of the Navy was first



A pair of Chinese Navy Schreck FBA 17 flying-boats on the beach at Tsingtao.

abolished and reduced to a Naval Administration, but was re-established again on 1 June 1929. The reorganised Navy consisted of the First, Second, Training, Torpedo, Survey and Patrol Squadrons and there were Naval Headquarters at Mamoi (Fuchow) and Amoy. On 20 June 1929 an agreement with the British Government was signed by Admiral Yang Shu-chuang, which called for the sending out of a British Naval Mission to China and the training of Chinese naval officers in England.

In July 1928 the Navy engaged the German Lieutenant August Haensel as flying instructor, test pilot and adviser. A Heinkel HD 24 floatplane was ordered from a local firm and arrived from Germany on 25 December. After it had been test flown by Haensel in February it was based at Kiangnan Dockyard, 6 miles from the Bund, south of Shanghai. At that time a Wu seaplane was already in service there.

A new naval air station was established in Amoy. A flying school was being formed under the direction of Admiral Lin, the Naval Port Commander, and an aerodrome was constructed at Tseng Chu-an, 2 miles south of the Amoy University, at the site of an old fort on the east side of Amoy Island. It was intended for both land and sea aircraft and was completed with one 75 x 15 m steel hangar in July 1930. A Navy officer, Chen Wen-lin, had been despatched in 1928 on an aeronautical mission to Germany, where he learnt to fly at the Bäumler aviation school. He then went to England to purchase aircraft.

Four Avro Avian IV two-seat trainers were ordered and two of them arrived at Amoy in May 1929. The third was to be flown to China by Chen Wen-lin and was registered X-CRIA and named "Amoy/Hsia Men". Commander Y T Barr (Barr Yu-tsao) was originally to have accompanied Chen, but instead the Danish-German Lieutenant Christian Johansen, who had just been employed as flying instructor, was to participate in the flight. They left London on 2 March, but had to return for repairs and left for the second time on the 13th. They finally landed at Tseng Chu-an aerodrome, Amoy, on 12 May. Ten days later they continued to Nanking after having superintended the erection of the other three Avians, including one fitted out as a floatplane.

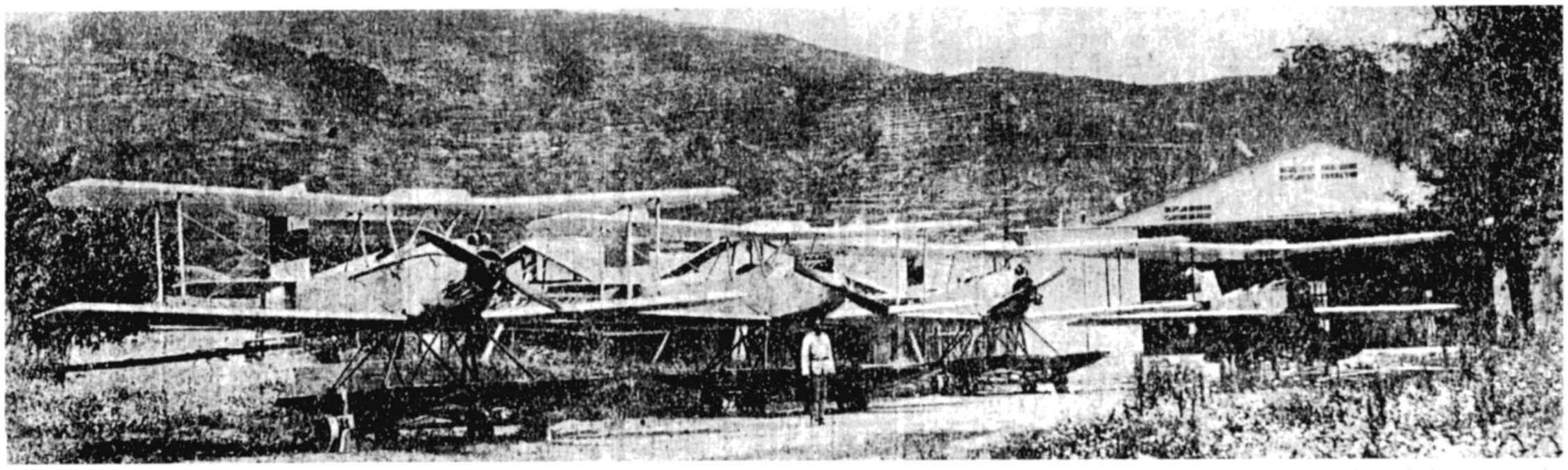
Captain Chen Wen-lin was appointed Chief of the Naval Aeronautical Bureau. Johansen was not satisfied with the conditions at Amoy and soon handed in his resignation. He told a British officer that he saw little prospect of progress as long as Chen was in charge and finally left for Denmark on 5 October. The Nanking State Council appointed Shen Teh-shieh as Director of the Naval Aviation Department on 28 March 1930.

One of the Avians probably crashed in September 1929 and another one force landed in the harbour and was severely damaged in March 1930. This left the Navy with only two serviceable Avians. Still, on 5 April 1931 the first 18 student aviators of the Naval Aviation School at Amoy were graduated and in the summer another 16 were enrolled.

Meanwhile more aircraft were being built at Fuchow for the naval aviation station in Shanghai. "Hai Tiao", the first of two Rolls-Royce Eagle-powered Ting torpedo-bomber floatplanes, was delivered there in December 1929. The second, "Hai Ying", followed in the summer of 1930. Trainers were acquired in the form of five float-equipped de Havilland DH 60 Gipsy Moths, the first two being delivered in February. They were to be used by the Naval (Kaochangmiao) Aviation School at Hungjao aerodrome, which was headed by Haensel. Haensel was soon employed as instructor in Szechwan, however, and left the Navy in April.

Naval aviation students received initial training at Hungjao and then continued to train on seaplanes at Kaochangmiao for another six months. Chinese Naval Cadet Lin Ching-yuan and instructor Chen Chang-nee died when one aircraft, almost certainly a Moth, crashed at Hungjao on 21 March 1931. On 28 May another Cadet, Li Yu-chi, crashed to his death in another accident. An interesting and unusual thing was the Navy's floating hangar that was built at the Kiangnan Dockyard. It was moored in the Yangtze River alongside the slipway and was capable of housing a single floatplane for repairs or maintenance.

Commander Chen Wen-lin had met German pilot Hans Bertram when he was training at the Bäumler aviation school in Germany and when Johansen left, Chen returned to Europe and asked Bertram to work as aeronautical adviser to the Chinese Navy. Bertram accepted and half a year later he arrived in Amoy. He soon went to Fuchow, where Chen Wen-lin was stationed.



Although of poor quality this illustration of Chinese Navy aircraft at Fuchow is quite interesting: From left three exemples of the Wu with different types of engine, and the Chia.

Avro Avian IV X-CRIA "Amoy/Hsia Men" landed at Amoy on 12 May 1929 after a flight from Great Britain.

A new aircraft built at the Fuchow shipyard was ready for its test flight. It was the "Chiang Hung" (Type: Chi) training floatplane, which was powered by a Wright Whirlwind engine, and this aircraft was successfully flown one week after Bertram's arrival (in June 1930). The Chi-2 was named "Chiang Yen" and was completed in August 1930. The "Chiang Hung" was used soon afterwards as a makeshift "bomber". Three land aircraft were sent from Amoy to reinforce the single seaplane for operations against a "bandit" named Lu Hsing-pang near Fuchow.

In October 1930 and January 1931 the naval authorities at Amoy purchased six Breguet 14s from a French aviation company in Indo-China, although these aircraft were apparently little used. The Naval Air Establishment in Fuchow moved to Shanghai in February 1931 and in October two new trainers of the Keng type, the "Chiang Ho (Hao)" and the "Chiang Feng", were completed by the workshops there. The Navy planned to order more DH 60 Moths, but Bertram wanted to favour German interests and asked Junkers to offer four two-seat A 50s, of which two were to have interchangeable float undercarriages, in October 1930.[1]

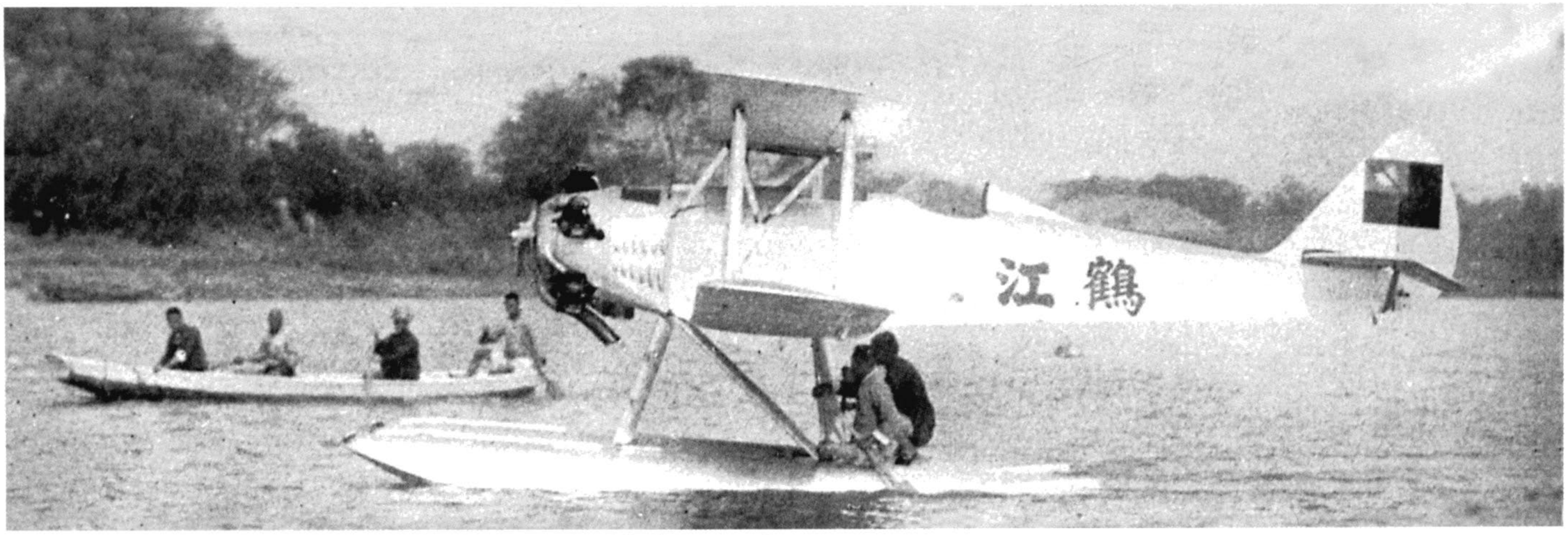
In April 1931 three new Moths were ordered and these could also be fitted with floats. They were named "Chiang Kuen", "Chiang Peng" and "Chiang Li" and other Moths were named "Chiang Wu", "Chiang Hsien" and "Chiang Yi".

1 In September 1931 Bertram attempted to fly from Berlin to China in a Junkers F 13 floatplane. The aircraft was lost in the Bay of Bengal, but he survived and was to remain in China until April 1933.

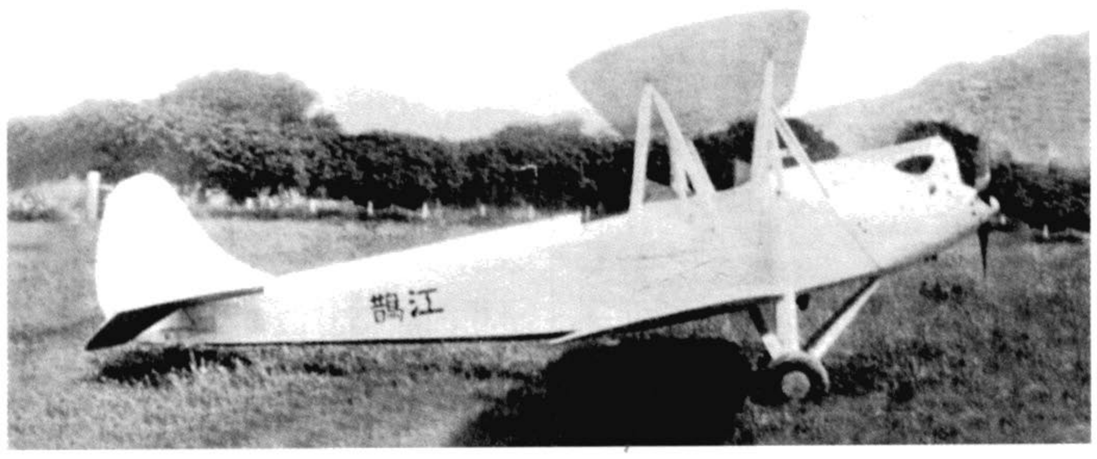
The Chinese Navy had another air station at Yu San, near Tsingtao in Shantung. The Navy's Third Squadron at Tsingtao was originally the North-Eastern Squadron, the navy created by Chang Tso-lin in Manchuria. It was under the command of Admiral Shen Hung-lieh. In the summer of 1933 a mutiny occurred, which ended with the desertion of three cruisers to Kwangtung, but the rest of the squadron remained at Tsingtao. In May 1935 a representative of the Central Government Military Affairs Commission inspected the Third Squadron.

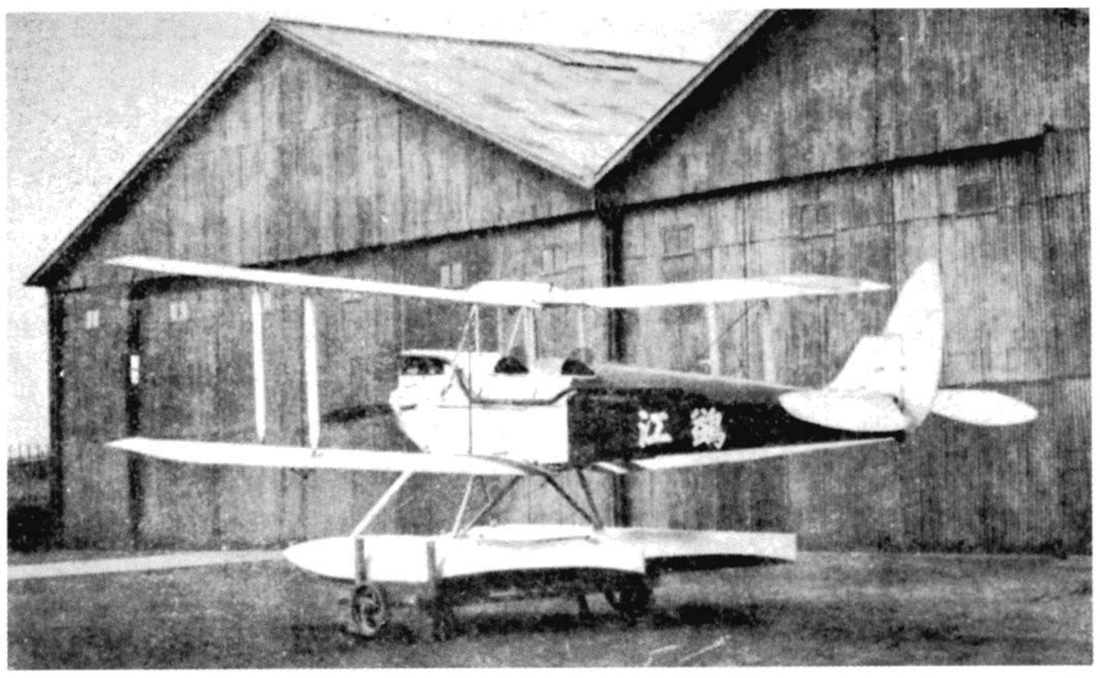
The first aircraft stationed at Tsingtao were probably two Schreck amphibians, one FBA 17 HMT2 and one FBA 19 HMB2, which were received sometime in the summer of 1929 from Chang Hsueh-liang's aviation squadron at Hulutao in Manchuria. By January 1930 there were three FBA 17s and two FBA 19s, which had all been brought from Hulutao and were used for training. In 1932 the Tsingtao Aviation Squadron of the North-Eastern Chinese Fleet, under the command of Admiral Shen Hung-lieh, had an aircraft inventory of three amphibians of each type and there was an aviation school for naval pilots with the Russian Captain Homiakoff as instructor.

In the spring of 1932 an Aichi AB-3 single-seat reconnaissance floatplane was delivered to China from Japan. The Navy had ordered a small warship, the cruiser



The Keng was built in 1931 and this example is named "Ching Hao".





Above: Avro Avian "Chiang Ngo" (left) and de Havilland DH 60 Moth "Chiang I" (right). Notice different paint schemes and markings.

Left: The "Chiang Ch'üeh" was designed by Pan Ting-hsiu and built by the Navy at Amoy.

"Ning Hai", from the Harima Shipyard and its equipment was to include an aircraft for observation. Construction of the ship started in February 1931 and was completed in August 1932. Only the single Aichi AB-3 was acquired, but a similar aircraft was built at Shanghai in 1934 (see later). The "Ning Hai" was the only Chinese warship capable of carrying aircraft.

The naval aviation activities at Hungjao ceased with the Japanese bombing of the airfield on 22 and 23 February 1932. In February 1933, when the Shanghai Aviation Bureau was formally annexed to the one in Amoy, there were nine aircraft at Kaochangmiao, Shanghai. Six of them, "Chiang Feng", "Chiang Yi", "Chiang Hung", "Chiang Ho", "Chiang Tze" and "Chiang Yen", were all reported to have been built by the Navy, and there were three imported machines. The Naval Establishment in Amoy, where aviation workshops had been erected in 1932, built a two-seat trainer in the following year. It was called the "Chiang Ch'üeh" and was powered by a Cirrus Hermes engine and it was the only Navy-built aircraft that was not fitted with floats. By March 1933 only two Avians remained in Amoy, but two new examples had reportedly been ordered, although this had not been confirmed.

Naval Aviation was apparently not much affected by the rebellion of the 19th Route Army in Fukien in November 1933. The rebellion was defeated by Nanking forces in January 1934 and the naval establishments at Amoy and Pagoda Anchorage, Fuchow, were taken over peacefully by the Chinese Navy about 10 January.

By April 1934 only three aircraft were in service in Shanghai: a Chi/Keng trainer (Wright engine), a Gipsy Moth and the Aichi AB-3. Another Chi or Keng had just crashed near Wenchow on 1 April. In addition a new single-seat reconnaissance floatplane for the "Ning Hai" cruiser was under construction in the workshops. It was the Hsin, which had folding wings in order to be easier to stow away than the Aichi AB-3, and it was delivered in 1934 and was named "Ning Hai" as well ("Ning Hai Fu How").

A report dated September 1934 on the Naval Establishment at Strand Beach, 1 mile north-west of Tsingtao, Shantung, revealed that lack of funds had hindered development and that no new aircraft had been obtained. Four Schreck FBA 17s and four FBA 19s were serviceable. The hangars were being demolished and the aircraft were just being moved to a newly built air station with an iron hangar, slipways, repair shop, quarters and administrative buildings at Tuantao, 3 miles southwest of the entrance to Tsingtao Harbour. The Tsingtao school was operated by Admiral Hsieh Kung-cheh and was commanded by Captain Tai Wen-tsun. Two Russian officers, Lieutenant Comman-

Names of Chinese Navy Aircraft		Type
Hsia Men	Amoy	Avian
Chiang Ch'üeh (Ch'io)	River Magpie	Amoy trainer (Pan)
Chiang Chun	River Falcon	Pan
Chiang Feng	River Phoenix	Keng-2
Chiang Fu	River Widgeon	Wu-1
Chiang Ho/Hao	River Crane	Keng-1
Chiang Hsien	River Silver Pheasant	Moth
Chiang Hung	River Wild Swan	Chi-1
Chiang I (Yi)	River Fishhawk	Moth
Chiang Kuan	River Stork	Moth
Chiang Li	River Oriole	Moth
Chiang Lu	River Egret	Wu-2
Chiang Ngo (Oh, Eh)	River Osprey	Avian
Chiang Ni	River	a trainer
Chiang Ou	River Gull	a trainer
Chianh Peng	River Roc	Moth
Chiang Tze	River Cormorant	a trainer
Chiang Wong	River	a trainer
Chiang Wu	River Cockatoo/Parrot	Moth
Chiang Yang	River Mandarinduck	a trainer
Chiang Yen	River Wild Goose	Chi-2
Hai Tiao	Sea Eagle	Ting-1
Hai Ying	Sea Hawk	Ting-2
Ning Hai	Calm Sea	Aichi AB-3, later Hsin-1

der E Pankoff (mechanic) and Captain P Homiakoff (pilot) were employed as instructors. Ten Chinese naval officers had recently qualified as pilots.

This stae of affairs apparently changed to the better, because three years later, in April 1937, there were two seaplane squadrons at the so-called Tsingtao Naval Aviation Centre with 12 FBA 17s and FBA 19s, and an aviation school with 3 FBA 17s. A Captain Wang was Commander and the Russians Homiakoff and Pankoff were still there. There were 15 pilot and observer officers and 15 student pilots. Three of the 15 seaplanes in use had been built in the shops at Tsingtao and the officers complained that the Nanking Government still showed little interest in the development of naval aviation and no modern aircraft had been purchased.

Captain Chen Wen-lin headed what had become the Naval Aviation Administration and the Pilot Training School was commanded by Captain Kou Hsien-shen. By February 1935 twelve Naval Air Service cadets were undergoing flying instruction at the land- and seaplane training school in Amoy and there were eight qualified pilots. The aircraft inventory included two DH 60 Moths, the locally built "Chiang Ch'üeh" trainer and two Fuchow-built Chi (or Keng) floatplanes. The Navy's six-year old Heinkel HD 24 floatplane was still sometimes flown and three Breguet 14s remained for instructional purposes. An Avro Avian had just crashed on 14 February, but proved to be repairable. Two small single-seaters designed by Captain Chen for the 75 hp Pobjoy engine were under construction, but the fate of these aircraft is not known.

Owing to financial stringency the Naval Air Service was neglected and few new aircraft could be purchased. The last report on naval aviation that has been found is not dated but is probably from 1936. At that date the Chinese Naval Air Station at Amoy possessed an Avian, a Moth, two Wright-engined Chinese seaplanes, one Chinese-built "copy of the Avian" (the "Chiang Ch'üeh" probably), the old Heinkel and two derelict Breguet 14s. A second copy of the Avian and a small single-seat Chinese-designed aircraft were under construction in the workshops. There were about 12 pilots.

Aircraft used by the Chinese Navy

Type	Qty	Year
Chia	3	1919
I	1	1921
Ping	2	1924
Wu	3	1927
Heinkel HD 24	1	1928
Avro Avian	7 (9)	1929
Schreck FBA 17 and 19	>15	1929
Ting	2	1929
DH 60 Moth	8	1930
Breguet 14	6	1930
Chi	2	1930
Keng	2 (3)	1931
Aichi AB-3	1	1932
Pan	1	1933
Hsin	1	1934

The fate of the Naval Air Stations at Amoy, Shanghai and Tsingtao is not known. On 13 August 1937 hostilities broke out in Shanghai. Beginning on 20 August Japanese Naval Air Force aircraft bombed naval installations in Shanghai and on 7 September Kaochangmiao Shipyard was bombed. The "Ning Hai" was sent with other ships to the Chiang-yin area to defend the passage to Nanking. It was sunk on 23 September. The Japanese occupied the Shanghai area in November 1937 and Tsingtao surrendered to the Japanese Navy in January 1938. Japanese planes were sighted over Amoy on 3 September 1937 and starting a few days later naval installations were bombed. On 10 May 1938 the first landing of Japanese troops took place and on the following day the city fell. Fuchow was attacked and taken during the same month.

The Hsin had folding wings in order to be easier to stow. It was delivered in 1934 and was named "Ning Hai".

The Chinese Air Force in 1942-45

Japanese attack on Liang-shan Air Force Base, 6 June 1943. 4th Group Curtiss P-40 fighters. (Wings of China)

The Japanese attack on Pearl Harbor on 7-8 December 1941 did not immediately change the stalemate that had developed in the Sino-Japanese War. In fact, historians maintain that China "sat out" the 1941-45 period of the war and let the USA beat Japan. Chinese commanders resisted American pressures for more active military operations, no matter how much military aid was provided. For example, an American report dated April 1944 described the CAF's "notorious inactivity" and maintained that the reason was poor officers in the highest positions and assignments because of family and friends, rather than ability. As this book does not intend to describe the air war as such or the CAF's operational records, this issue has not been studied and will not be discussed further.

In 1942 the Commission on Aeronautical Affairs consisted of Generalissimo Chiang Kai-shek (chairman), Dr H H Kung, Dr T V Soong, Madame Chiang Kai-shek, Generals Lung, Hsu, Ho, Fung, Pei, Chan and Chou. Chinese personnel working with the USAAF in China under the command of Colonel Wang Tsu-ming were directly responsible to Chiang, as was the Administrative Bureau of the Commission, headed by General Chou Chih-jou, the Chinese Air Force Headquarters, the Administration Headquarters and the Air Defence Headquarters. The CAF Headquarters, located at Chengtu, was headed by General Mao Pang-ch'u (Chief of Operations).

Under the Administration Headquarters at Chengtu were the Instruction Division with the cadet flying schools at Chanyi, Ipin and Kunming, and the NCO School and Mechanics School at Chengtu, and under the Tactical Training Department was the Air Staff College at Chengtu, the Russian-influenced school at Ining, Sinkiang, and fighter and bomber training squadrons. Five so-called Route Air Forces comprised the entire non-occupied China and had authority over all air activities, airfields and supply: the 1st at Chungking, the 2nd at Kweilin, the 3rd at Chengtu, the 4th at Lanchow and the 5th at Kunming.

Lend-Lease Aircraft

On 11 March 1941 the Lend-Lease Act was passed and on 6 May president Roosevelt declared that China was eligible for aid under this program. Any hopes that the USA would now make good what had been lost during the 1938-41 period were not fulfilled, however. Although over 2,800 combat aircraft were allocated to China under Lend-Lease during the war, only about 660 were actually received by the CAF.

In 1941, 144 Vultee 48C (P-66) Vanguards, which had originally been built for Sweden, 125 Republic P-43A Lancers, 33 Douglas A-20 Bostons and 33 Lockheed A-28 Hudsons had been released for Lend-Lease to China. The Bostons were not delivered, but the Hudsons, which were shipped from the USA in August 1942, were allotted to the 2nd Squadron of the CAF. Only 19 arrived, however. The P-66s were shipped to China during 1942, starting in March, but only about 80 were received by the CAF and used briefly by the 3rd, 5th and 11th Air Groups. Only 108 of the Republic P-43As were shipped and of these just over 50 were received by the CAF in 1942. They were used by the 4th Fighter Group and only 22 remained by November 1943.

Pilots of 28th Squadron, 3rd Group, CACW, in front of a Curtiss P-40. (Wings of China)

For a long time the Japanese were victorious. They invaded Burma and took Rangoon on 7 March 1942. From that date all supplies, including aircraft, had to go via India because the Japanese cut off the so-called Burma Road. India became a training base for Chinese troops and also for the CAF and 150 Stearman PT-17 Kaydet trainers were acquired in 1942 for use at the Chinese Elementary Flying Training School (CEFTS) at Walton, Lahore. There was another Flying Training School (FTS) at Karachi. At the end of 1942, 79 pilots had completed their training and returned to China.

Fourteen Douglas C-53 Skytrooper transports were delivered during 1942 and twelve of them were assigned to CNAC for the "Hump" airlift between India and China over the Himalayas. In addition a few transport aircraft were acquired from an unexpected direction. At least one Nakajima Ki.34 twin-engine transport was captured from the Japanese and taken over by the CAF. The original Japanese engines were later substituted by Wright Cyclones and the aircraft was then transferred to CATC in June 1943.

The "Flying Tigers" and the Americans

The American Volunteer Group (AVG) was constituted on 1 August 1941 with Claire Chennault as Commander. It was organised into a Headquarters section and three squadrons with 18 aircraft each. By the end of November 1941 all Curtiss H-81 Hawks ("P-40s") had been delivered and most of them were adorned with the gaping shark's mouth that was to become the unit's special symbol. One machine, P-8153, was fitted with a camera and was used in the

USAAF Curtiss P-40s fighting in China.

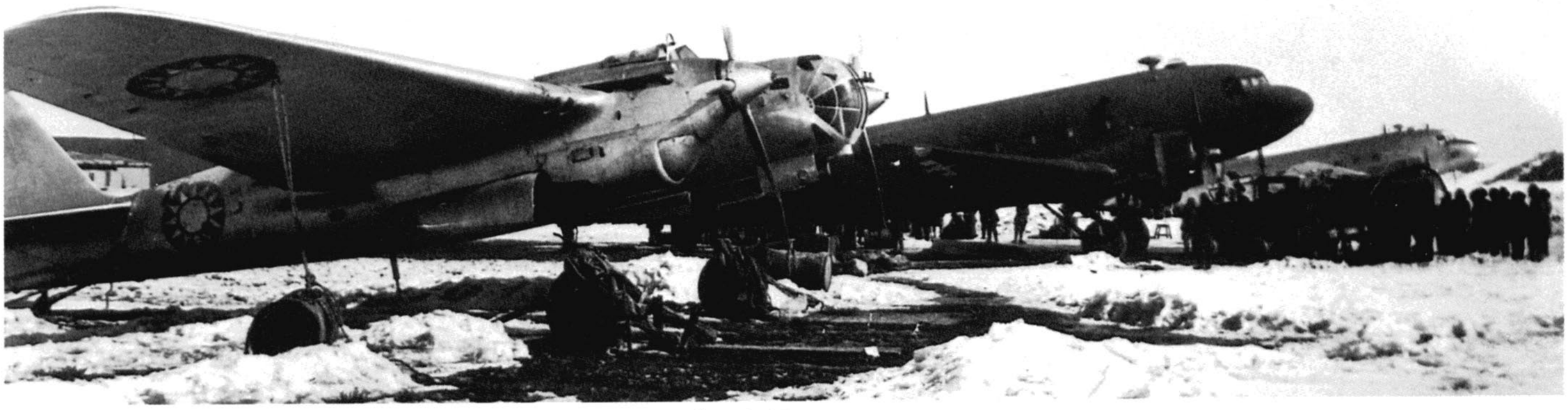
photo-reconnaissance role for flights over Japanese-occupied territory in Thailand. In December 1941 the 1st and 2nd Squadrons left Kyedaw in Burma and flew to Kunming and the 3rd Squadron moved from Kyedaw to Mingaladon, Rangoon.

On 20 December a formation of ten Mitsubishi Ki.21 bombers headed towards Kunming and the AVG P-40s were scrambled to intercept the intruders. The AVG claimed six of the Japanese bombers destroyed without own losses. Later in the month a large number of Japanese aircraft attacked Rangoon and the 3rd Squadron claimed six bombers and four fighters and lost three P-40s and two pilots. On 30th December the 2nd Squadron joined the 3rd at Mingaladon.

The 2nd American Volunteer Group (2nd AVG) was to have been set up early in 1942 and 82 pilots and 359 technicians were hired by CAMCO. The first personnel sailed from California on 21 November 1941 aboard the "Noordam" and the "Bloemfontein", but were diverted to Australia in December. Equipment in the form of 33 Douglas A-20 Bostons and 33 Lockheed A-28 Hudsons had been diverted from RAF orders and the Bostons were sent to Africa, where they were to be assembled and flown to Burma. The 3rd AVG was to be established with Vultee Vanguards, later Republic Lancer fighters, but in the end neither the 2nd nor the 3rd AVG was set up.

Due to the Japanese advances, Mingaladon was evacuated early in March 1942. The AVG moved, first to Magwe, 320 km north of Rangoon, and then to Loiwing. On 22 March 1942 an initial six of 30 P-40Es arrived at Loiwing. By mid-April the AVG had been restored to 36

Above: Fighter pilot in the cockpit of a Polikarpov I-15 bis.
Below: Very nice photo of Polikarpov I-15 bis s/n 2305.



Chinese Tupolev SB with M-103 engines and American Douglas C-47s.

serviceable aircraft and another 39 were under repair. On 1 May the AVG evacuated Loiwing and unfortunately 22 P-40s that were under repair and could not be trucked away had to be destroyed in order to prevent their capture by the Japanese (See below!).

From now on the AVG was based at Kunming and other places in China and on 4 July 1942 it was finally dissolved and turned over to the USAAF as the 23rd Fighter Group. A total of 28 P-40Bs (H 81s) and 18 P-40Es remained from the 130 aircraft supplied. Of these only 18 and 17, respectively, were serviceable. Only 24 of the AVG pilots chose to stay, but by that time 16 P-40Es and 22 pilots belonging to the 16th Fighter Squadron, USAAF, had arrived at Kunming.

The AVG had received official confirmation for the destruction of 297 Japanese aircraft. Twelve of their own aircraft had been lost in aerial combat, 10 were destroyed by ground fire and 13 in air raids. Twenty-three were destroyed in accidents and 22 during evacuation.

According to an original report named "AVG performance to date", dated 5 July 1942, a total of 101 (sic) P-40s had been delivered to start with. 35 of these had crashed during training and thus 66 had been available for combat. 15 were shot down or lost, five were destroyed at Magwe and 22 went unserviceable and were used for parts. On 1 May 1942 AVG pilots started to fly P-43s, of which 100 had been assigned. Reported enemy losses up to 6 May 1942 were 233 aircraft. The total number of enemy aircraft probably destroyed was estimated to about 400. These numbers must be compared to those given above. The AVG adhered to the RAF system - that an enemy aircraft was reported destroyed only when seen by an eyewitness.

Early in March 1942 Lt Gen Joseph Stilwell, Commander-in-Chief of the US forces in the China-Burma-India (CBI) theatre, arrived in China to co-ordinate American aid to China. Chennault became a Brigadier-General in the USAAF in April and in July the AVG was integrated into the USAAF as the 23rd Fighter Group, China Task Force (CATF). The Group's 74th Fighter Squadron was based at Kunming, the 75th at Kweilin and the 76th at Hengyang. The CATF also included the 16th Fighter Squadron with eight serviceable P-40Es and the 11th Bomb Squadron with seven B-25 Mitchells.

The 10th Air Force, USAAF, was established on 4 February 1942 and moved to New Delhi, India, in March. Its headquarters moved to Barrackpore in October 1943, Calcutta in January 1944, Kanjikoah in June 1944, Myitkyina, Burma, in November 1944, Bhama, Burma, in February 1945, Piardoba, India, in May 1945 and finally Kunming on 23 June 1945. It was in Shanghai from 18 October and left for home in January 1946. The 14th Air Force, which was commanded by General Claire Chennault and had evolved from the China Air Task Force, was established on 5 March 1943 and activated at Kunming five days later. Its headquarters moved to Peishiyi, China, on 7 August 1945 and left for the USA in January 1946.

The 10th Air Force had 597 aircraft on 1 December 1943. On 1 May 1944 it had 1,024, plus 286 more en route and 221 in the USA to go. The 14th Air Force had 225 aircraft on 1 December 1943 and 296 on 1 May 1944, with 61 en route and 33 to go.

A major air transport organisation was built up during spring 1942 by the Americans for the "Hump" route between India and China, which is described in more detail in the chapter on CNAC. It was first known as the 1st Ferrying Group (Ferrying Command) and on 1 December 1942 became the India-China Wing of the Air Transport Command. An initial 75 Douglas C-47s and C-53s delivered in 1942 were followed by 30-40 Consolidated C-87s (a transport version of the B-24 Liberator), 50 Curtiss C-46 Commandos and a single Douglas C-54A in 1943.

Changes in CAF Command

In January 1943 the CAF Headquarters were reorganised and moved from Chengtu to Chungking. Major General Chou Chih-jou was placed in command of the entire CAF as Director of the Aeronautical Commission. Former Chief of Operations Mao Pang-ch'u was appointed Assistant Director, but had gone to the USA as head of the Chinese Air Mission there. Major General Huang Kuang-jui, formerly Head of the Administrative Headquarters, was likewise appointed Assistant Director. The Headquarters

Polikarpov I-16 fighter serialled P 2105.

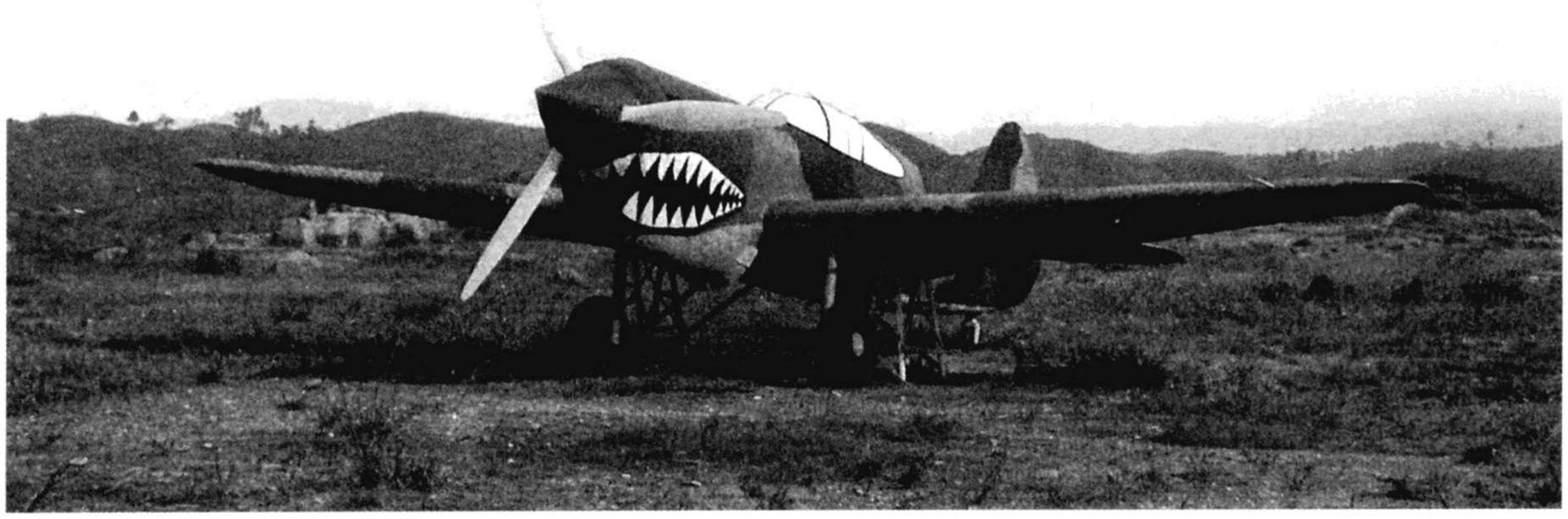
of the 1st Route Air Force was moved from Chungking to Peishihyi, about 10 miles west of the city. All training was united under a new Training Department.

The first of 27 Curtiss P-40E Kittyhawk fighters had been shipped from the USA in August 1942 and by the beginning of 1943 about ten of them had reached China. New bombers had been acquired as well in the form of 150 North American B-25C Mitchells ordered on 23 January 1942. B-25Ds, B-25Gs, B-25Hs and B-25Js were later delivered, but from a total of 489 assigned to China under Lend-Lease in 1943-45, only 131 were transferred and of these 73 were actually taken over by the CAF. A few more were transferred directly from the USAAF.

Seventy Ryan PT-22 Recruits and 15 Cessna AT-17 Bobcat twin-engine trainers were delivered under Lend-Lease to the Chinese FTS at Lahore and Karachi in 1943. A large number of Douglas C-47s were delivered in 1943-45 - the first examples starting to arrive already in November 1942. The majority was assigned to CNAC for the "Hump".

By 31 December 1943 the CAF was still quite a small force. It had three squadrons of A-29s (14 aircraft), five squadrons of SBs (48 aircraft), four squadrons with 28 P-40s and 22 P-43s and eight squadrons of P-66s (53 aircraft).

In August-October 1943 the Soviet Union completely evacuated Sinkiang with the stoppage of the Soviet-Sinkiang trade and all the Soviet aircraft that had been stationed there left for the USSR. Sinkiang Governor Sheng Shih-ts'ai had decreed the withdrawal of most Soviet personnel and troops



A well-made decoy modelled after the Curtiss P-40.

Pilots of 28th Squadron, 3rd Group of the CACW, pose in front of one of the units North American P-51 Mustangs. (Wings of China)

from Sinkiang already in September 1942. In October six fighters, two bombers and three other aircraft left.

The first units of the Chinese-American Composite Wing (CACW) were activated on 1 August 1943. The Wing itself was activated on 1 October and was to comprise one medium bomber group and two fighter groups: the 1st Bomb Group with the 1st, 2nd, 3rd and 4th Bomb Squadrons, the 3rd Fighter Group with the 7th, 8th, 28th and 32nd Fighter Squadrons, and the 5th Fighter Group with the 17th, 26th, 27th and 29th Fighter Squadrons. In July 1943 the first American personnel intended for the CACW flew out of Miami and they arrived at Karachi on 31 July. Chinese personnel received special training in India in advance of being posted. The CACW was controlled by Chennault and the 14th Air Force.

The 2nd (12 B-25s), 28th and 32nd squadrons (10 P-40s each) were the first CACW units to move from India to China in October. At the end of 1943 the Composite Wing had eight B-25Ds and 17 P-40Ns in China, and four B-25Ds, 35 B-25Hs and 27 P-40Ns in India. CACW headquarters in China was at Kweiling and later, from May 1944, Liuchow. An Operational Training Unit (OTU) was established at Malir Field, Karachi, India, on 5 August 1943 and started with six old B-25s and six ex-AVG Hawk 81s (P-40Bs). By the end of the year it had eight B-25Cs, four B-25Ds and 66 P-40Es and P-40Ks.

Slowly Growing Strength

CAF operational strength as of 15 January 1944 was 101 fighters, mostly P-66s (49 operational), 47 Tupolev SB

Chinese Emelentary Flying Training School (CEFTS), Lahore (Walton), India, January 1943-November 1945

Opened in January 1943 and equipped with Stearman PT-17 trainers. PT-19s, AT-6s and AT-17s added early in 1945 for navigation, gunnery and bombing courses.

The 25th and last cadet course graduated on 11 November 1945

About 60 PT-17s, two At-6s and one AT-17 flown to China in December 1945 and a total of 207 aircraft shipped by boat to Shanghai in April 1946.

CAF Aircraft Inventory, 1 May 1944

20 A-29s
43 SBs
70 P-40s
20 P-43s
62 P-66s
5 C-47s

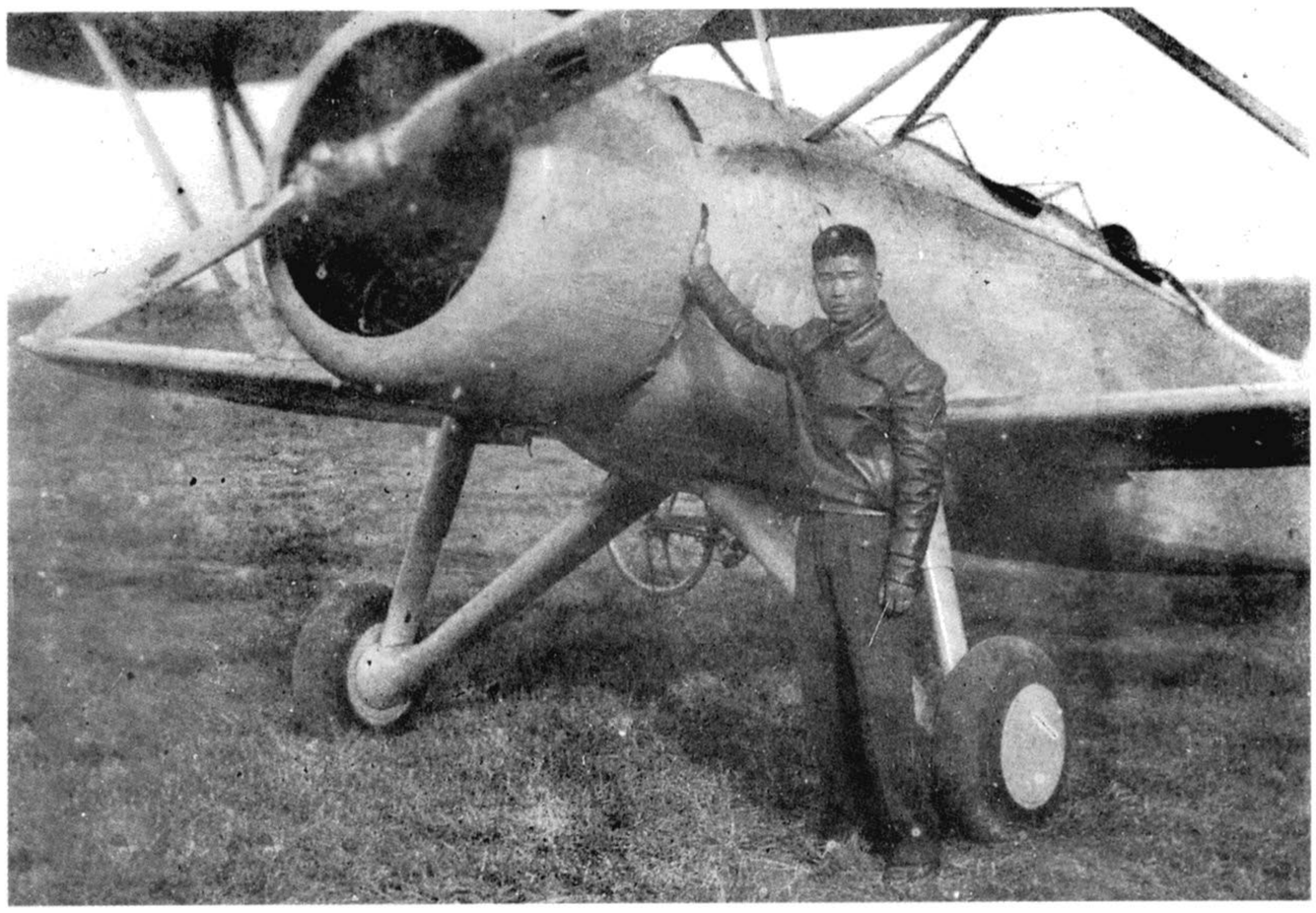
Composite Wing (CACW):

In China: 33 B-25s and 59 P-40s

In India: 27 B-25s and 28 P-40s

bombers (30 operational) and 11 A-29s (7 operational). The total number of operational aircraft was 96. The 14th Air Force, USAAF, had the following numbers of aircraft on strength as of 26 January: 46 heavy bombers (30 operational), 47 medium bombers (40 operational), 170 fighters (137 operational) and 15 transport and reconnaissance aircraft, total 222 operational aircraft, and in addition to this there was the Composite Wing. On 1 April 1944 the CAF was reported to have 6 heavy bombers, 71 medium bombers, 63 old light bombers, 413 fighters (including 82 old) and 27 transports (including CNAC aircraft). Of these, 29 medium bombers, 18 light bombers and 160 fighters were assigned to operational squadrons.

The last nine CACW squadrons reached China after training at Malir in India in 1944, the 1st, 7th and 8th in February, the 4th, 26th and 29th in March, the 17th in May, the 27th in June and the 3rd in August. The 3rd Bom-



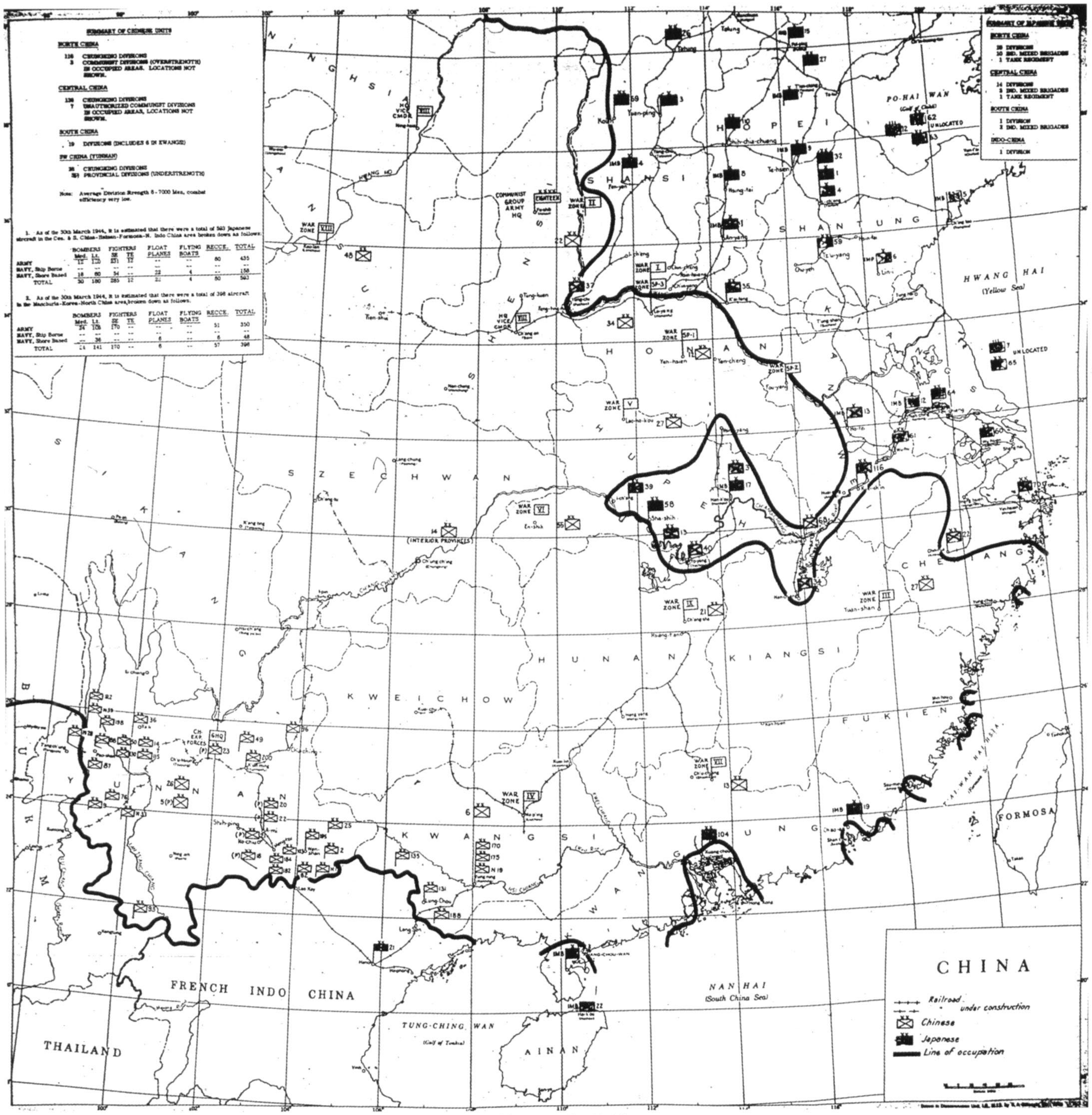
Chinese Air Force trainers, from top: The North American NA-16-3C, the Fuhsing built by No 1 Aircraft Factory, and the Ryan STM.

ber Squadron had been operating over Burma from May, however. A total of 55 P-40s and eight B-25s were lost by the CACW due to enemy action during 1944.

Under Lend-Lease the United States was committed to receive a large number of Chinese student pilots for training. The first detachment of 50 arrived in October 1941, the last in 1945, and by that time the training of a number of B-24 heavy bomber crews had started. By the end of 1945 a total of 889 pilots, 235 bombardiers, 83 navigators, 176 radio operators, 126 gunners and a number of mechanics, armourers and other categories had garduated after training in the American programme.

Training took place in India as well. A large number of Fairchild PT-19 Cornell trainers were to have been supplied to the Chinese FTS in 1944, but eventually only 127 second-hand PT-19s, PT-19As and PT-19Bs were delivered in September-November 1944. Thirty Vultee BT-13 Valiants, 20 North Americann AT-6 Texans and eight Beech AT-7 Navigators were added for advanced training.

In January 1944 Japan started an offensive in China. Changsha and its aerodrome was taken in June and several other important cities and aerodromes were lost later in the year: Hengyang on 26 June, Lingling on 8 September, Liuchow and Kweilin on 10 November, and Nanning on 24



American map showing frontlines and military dispositions in China early 1944.

Lockheed A-29 Hudson of the 2nd Group. (Wings of China)

November. Despite the allied successes in Burma, the Japanese continued to advance in China.

End of the War

138 Consolidated B-24 Liberators were allocated to China under Lend-Lease. The OTU in India received six in January 1944 and another four in April, but due to command disputes no aircraft were handed over to the CAF until at the end of the war when 37 B-24Ms were flown in from India. Just 48 of a planned total of 624 P-51 Mustangs were received by the CAF in 1945. The first 20 P-51Cs arrived in December 1944 for the 7th Fighter Squadron and as more P-51Ds and P-51Ks arrived during 1945 they replaced most of the P-40s in the 3rd and 5th Fighter Groups. The 27th Fighter Squadron continued to fly the P-40N until June 1945, however. The B-25Ds and B-25Hs were replaced by B-26Js.

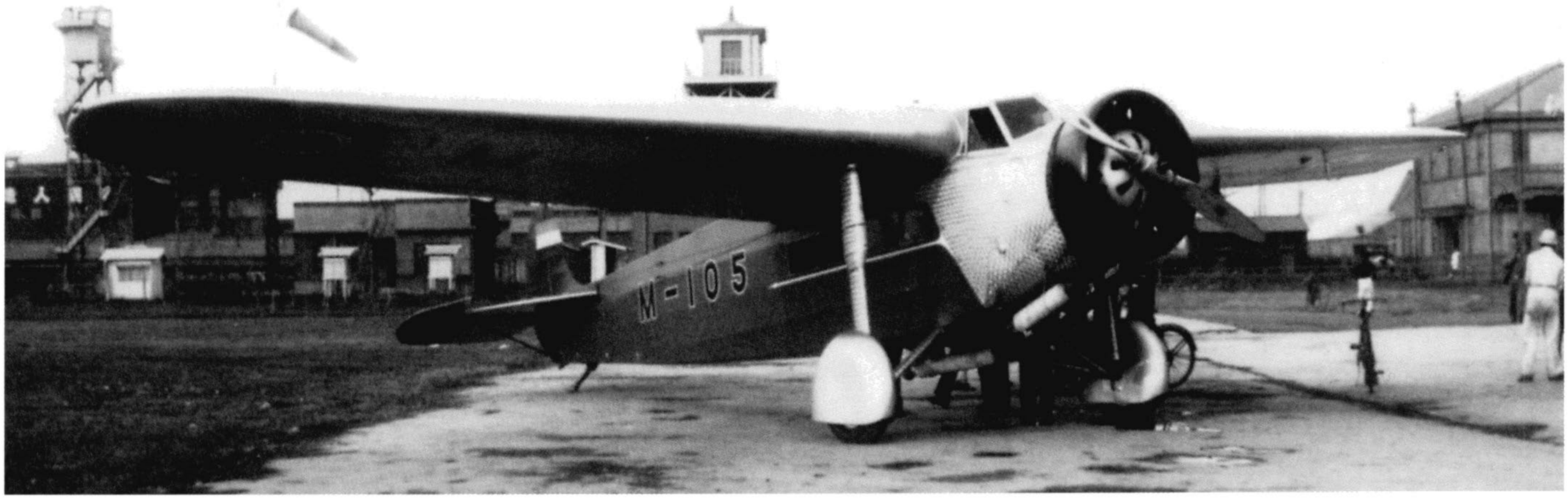
In the summer of 1945 the 12th Squadron of the 20th Air Group received nine photo reconnaissance Lockheed F-5E Lightnings in India and flew them into China. Some F-5Gs were also delivered. 50 F-5s had been allocated to China in 1944-45, but only 14 were handed over. In order to improve its transport capabilities the CAF took delivery of 24 C-46As, C-46Ds and C-46Fs in the summer of 1945. The CACW was disbanded on 19 September 1945 and all its aircraft were turned over to CAF control.

In January 1945 the land blockade of China was broken when the Burma Road was finally reopened. The war in China continued, however, and the end came suddenly with the atomic bombs in August and the Soviet invasion of Manchuria. The Japanese capitulated and a race between the Communists and the Nationalists to gain better positions for the post-war period started. This was soon to lead to yet another of the numerous civil wars in China.

Aircraft Acquired by the Chinese Air Force in 1942-45

Type	Quantity	Year	Remarks
Lockheed A-29 Hudson IIIA	19	1942	33 allocated
Curtiss P-40E/K/M/N Warhawk	330	1942	1,226 allocated
Republic P-43A Lancer	57 (51)	1942	125 allocated
Vultee 48C P-66 Vanguard	81 (79)	1942	144 allocated
Douglas C-47/53 Skytrain	20	1942	Many more used by CNAC and in the CBI theatre
Beechcraft UC-43 Traveler	9	1942	10 allocated
Stearman PT-17 Kaydet	150	1942	
Nakajima Ki.34 (AT)	1	1942	Captured from Japanese
Junkers W 34	1	1943	Ex-Eurasia
N A B-25D/G/H/J Mitchell	84	1943	489 allocated
Cessna AT-17 Bobcat	15	1943	
Ryan PT-22 Recruit	70	1943	
Beechcraft AT-7 Navigator	8	1944	
Fairchild PT-19/A/B Cornell	127	1944	670 allocated
Vultee BT-13 Valiant	30	1944	
Consolidated B-24M Liberator	37	1945	138 allocated
North American AT-6A Texan	20	1945	
North American P-51D Mustang	48	1945	624 allocated
Lockheed F-5E/G Lightning	14	1945	50 allocated
Curtiss C-46A/D/F Commando	24	1945	

Chinese Governments Collaborating With Japan



Fokker Super Universal M-105 of Manchukuo airline MKKK.

Canton

By June 1941 the Japanese-supported regime in Canton planned to organise an air squadron with a number of aircraft, which they were to receive from the Japanese. They were to adopt a national insignia very similar to that used by the CAF, but it is not known if these plans were ever realised. An Aviation Control Bureau had been established in Canton on 20 May 1940.

Peking

On 24 November 1935 General Yin Ju-keng, who was backed by the Japanese Kwantung Army, declared an independent East Hopei Government in Peking and restored the old five-barred Chinese republican flag. On 12 December the so-called Hopei-Chahar Political Council under General Sung Che-yuan was set up. After July 1937 Sun sided with Chang Kai-shek against Japan and tried to defend Peking but he had to give up the city on 31 July.

As far as known Sung Che-yuan's Peking government had no air force, but on 23 October 1936 a civil air transport company, the Hui-t'ung Aviation Company (Hui-t'ung hang-k'ung kung-ssu) was formed at Tientsin. It is described separately under the heading Civil Aviation. On 14 December 1937 the Japanese North China Area Army set up the so-called Provisional Government of the Republic of China in Peking. It was headed by Wang K'o-min and used the KMT flag.

Inner Mongolia (Meng Chiang)

The Inner Mongolian Autonomous Council (Nui-meng ti-fang tzu-chih cheng-wu hui) was set up at Pailingmiao, Shiyüan, in the spring of 1934, in order to counteract Japan's growing influence over the Mongols in northern China. However, when Japanese and Manchurian troops invaded Chahar in 1935 the Council started to collaborate with them. In February 1936 Prince Teh Wang (Demchuk Donggrub), the leading figure in the Council, entered into an alliance with the Japanese. He had established himself at Pailingmiao in April 1934.

Supported by Manchu troops, Prince Teh started a military offensive on 9 December 1935. By the end of January 1936 he had most of the province in his hand and on 28 June 1936 the Inner Mongolian Military Government (Nei-meng chün-cheng-fu) was set up. Prince Teh proclaimed himself ruler of an independent Mongolia and started to organise his own, Japanese-equipped army. Japan provided weapons and advisers. In August he tried to advance further into Suiyüan, but was driven back. A new invasion followed in November, when Mongolian and Manchurian troops were supported by Japanese aircraft, which reconnoitred Suiyüan before the first attack on the 16th.

The operations centred on Changtu, a town on the Chahar frontier, east of Pailingmiao. Aided by Nanking aircraft Chinese troops fighting the "Manchukuo and Mongol bandits" tried to recover lost districts. Ten "rebel aircraft" raided Pailingmiao and dropped a number of bombs on 26 November and it was reported that Prince Teh's forces were building an aerodrome at Shangtu. Nothing more is known about this air force, and it is not clear if it ever existed otherwise than in the form of Japanese Army Air Force aircraft.

However, on 8 July 1935 Manchukuo presented a Manko

Type 1 (Fokker Super Universal) passenger transport to Prince Teh. It was named "Keimori" (Heavenly horse) and was first flown by a Japanese pilot, who was after three or four years replaced by a Mongol pilot

The Central Government counter-attack was successful. On 24 November Chinese troops from Shansi captured Pailingmiao and in December 1936 Prince Teh's army was completely defeated. Prince Teh remained in power of the Federated Autonomous Government of Inner Mongolia, however, which was set up in November 1937. On 8 December 1937 he again proclaimed independence and adopted the name Meng Chiang for the country. The capital was established at Chan Pei, near Kalgan. Chinese dominance of the area ended in January 1938, however, when the Japanese imposed a government, in which the principal ministers were Japanese. On 29 April 1939 Prince Teh was installed as Chairman of the "Mongolian Joint Commission", into which was incorporated the Japanese-supported governments in South Chahar and North Shansi.

On 1 April 1940 the Aviation Control Board of Inner Mongolia was established, but this was probably a civil aviation organ. An air service agreement was concluded with Manchukuo on 1 July 1940.

Manchukuo

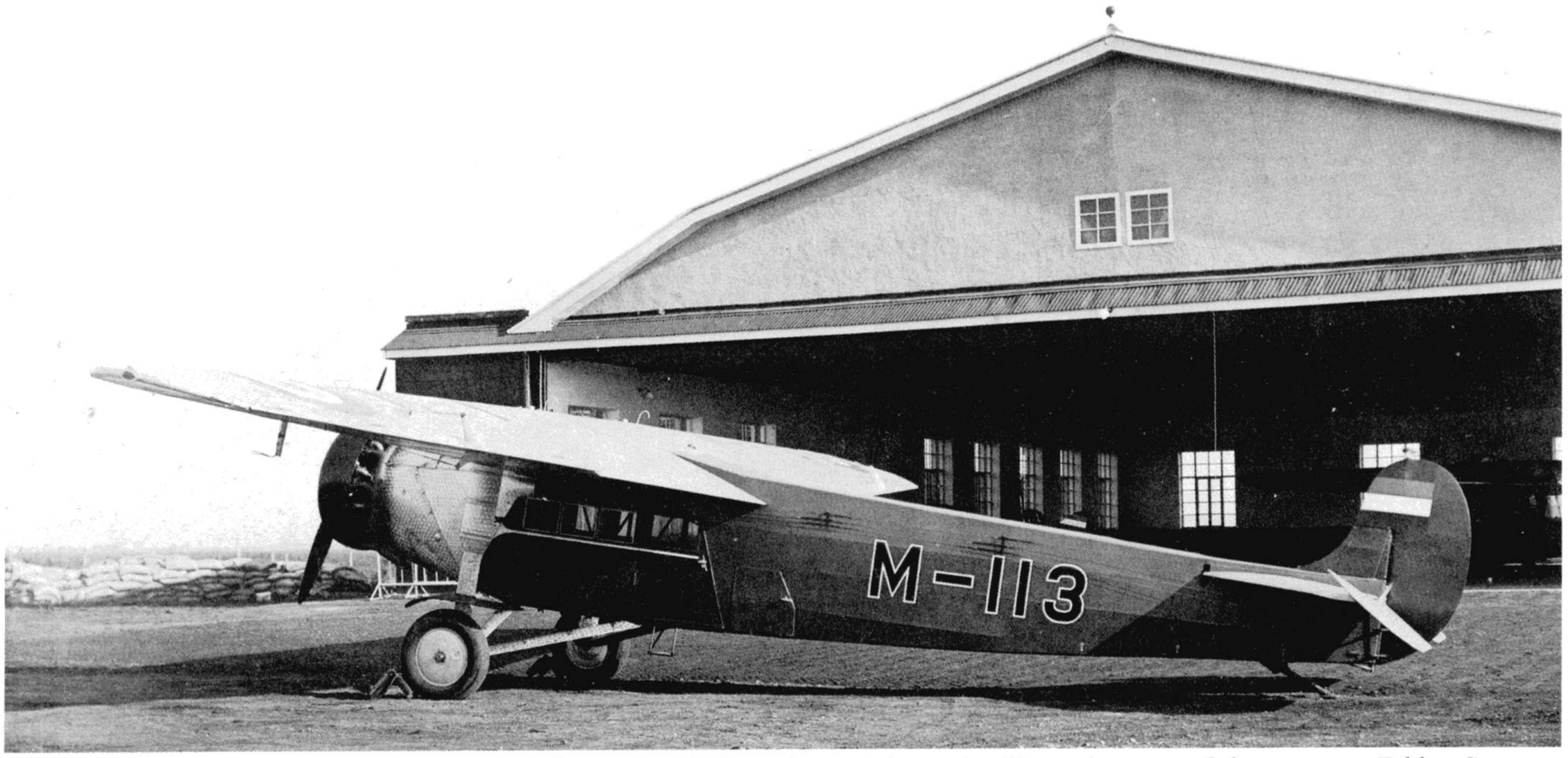
On 18 September 1931 troops of the Japanese Kwantung Army invaded Manchuria and by 18 February 1932 they had taken control of the whole province. Manchuria proclaimed its independence on 9 March and changed its name into Manchukuo. Aisin Gioro Pu-yi, formerly Emperor Hsuan-t'ung, was installed as regent and later, on 9 March 1934, as Emperor under the name K'ang-te. Real control of all important matters stayed with the Japanese, however, and Kwantung Army commander Shingi Muto was appointed commander of the Manchukuo National Defence Force. On 19 September 1932 the Kwantung Army started a military air transport service on the routes Darien-Mukden-Changchun-Harbin-Tsitsihar-Hailar-Manchouli and Harbin-Hailun-Tsitsihar.

Semi-Military Airline

According to an agreement signed with the Japanese Army on 7 August 1932 all remaining Manchurian air assets were transferred to the Japanese and at the same time it was agreed to set up an airline company. On 26 September 1932 the Manchu Air Transport Company (Manshu Kokuyusho Kabushiki Kaisha), or MKKK, was founded by the South Manchuria Railway Administration, the Sumitomo Concern of Osaka, Japan, and the Manchukuo Government. MKKK's main role was to provide a liaison service for the military, the government and the industry and the Japanese controlled all aircraft and personnel. A total of 22 airports were to be constructed within two years time. Chen Chui (Chang Shui), son of the Manchukuo Premier, was appointed Director, and Japanese Colonel Tsuneo Kodama became Vice-President. The company's head office was in Mukden.

On 22 October one Fokker F VII-3m and four Fokker Super Universals were accepted in Japan by MKKK. They were flown over on 24 October and the first to arrive, a Super Universal, reached Mukden two days later. More aircraft arrived and by January 1933 the fleet consisted of ten Fokker aircraft, but some were probably acquired second-hand from the Japan Air Transport Company (JATC). MKKK was expected to absorb the Manchurian services operated by JATC and was to work in close co-operation with the Japanese company.

All MKKK aircraft carried military-type national



All MKKK aircraft carried military-type national insignia, which emphasised the semi-military character of the company. Fokker Super Universal M-113.

Junkers Ju 86Z-2 of MKKK in Manchukuo. Fourteen of these were acquired from Germany in 1938-39.

insignia, which emphasised the semi-military character of the company. In fact its fleet included military types such as a Fokker D XVI fighter and a Fokker C VE reconnaissance aircraft originally intended for delivery to the Manchurian Air Force in 1931.

In the morning of 3 November 1932 the route Tsitsihar-Harbin-Changchun (Hsinking)-Mukden-New Wiju (Shingishu) was opened. Connection with JATC was made at New Wiju in north-eastern Korea, where passengers could change to an aircraft bound for Tokyo via Keijo (Seoul) and Osaka. Mukden-Darien was soon added to the network and there were also a number of branch lines that were operated primarily for the need of the Japanese Army: Changchun-Kirin-Hsinchan-Tunhwa-Unslarzu-Lungchingtsun-Huimotung, Harbin-Ningan, Harbin-Chiamussu (Chamuchi)-Fuchin and Harbin-Suihwa-Hailun-Koshan-Tsitsihar.

By June 1933 MKKK had two Fokker F VII-3ms, 16 Nakajima-built Fokker Super Universals and 12 de Havilland DH 80A Puss Moths. There were 25 pilots, 21 mechanics and 365 other staff. On 2 October the first two Manko Type 1s (the locally built copy of the Super Universal), M-118 and M-119, were completed. In November a photographic division was organised, which used the Manko Type 2 (a Super Universal fitted out for aerial photography) and 15 of the Manko Type 3 (a copy of the DH 80A Puss Moth) were later built for MKKK.

MKKK Route Network, 1937

Tsitsihar-Harbin-Changchun (Hsinking)-Mukden-New Wiju (Shingishu).

Mukden-Darien, Mukden-Tunghwa, Mukden-Chengteh (Jehol), Chinchow-Shanhaikwan, Chinchow-Chifeng-Changchun, and from Harbin and Tsitsihar to Peianchen-Tahieho.

Changchun-Kirin-Hsinchan-Tunhwa-Unslarzu-Lungchingtsun-Huimotung, Harbin-Ningan, Harbin-Chiamussu (Chamuchi)-Fuchin and Harbin-Suihwa-Hailun-Koshan-Tsitsihar.

In January 1934 MKKK acquired a single Clark GA-43, J-BAEP, which became M-701, but this aircraft was lost in a crash before delivery on 18 May 1934. An extra Puss Moth was delivered as compensation. In the summer of 1934 the MKKK fleet comprised two Fokker F VII-3ms, 18 Fokker Super Universals and six Puss Moths. According to published statistics MKKK carried 26,225 passengers, 995,000 kg of freight and 441,000 kg of mail in 1935.

A Manchukuo Aeronautical Society (Manshu Koku Kyokai) was formed by the Kwantung Army and the Government on 27 August 1936 and Chuichi Ohashi, Vice Minister for Foreign Affairs, was appointed President. Its purpose was to popularise aviation. A glider was obtained from the Kwantung Army but otherwise it seems that this organisation did not acquire any aircraft until in 1938.

In 1936 a Northrop Gamma 5D was received from the Japanese Navy for use as a photographic aircraft and the first of 12 Nakajima AT-2 transports entered service in May 1937. Six Messerschmitt Bf 108D Taifuns were delivered to MKKK in the same year and another 13 arrived in 1938. MKKK also received two ex-Japanese Army Air Force Junkers Ju 160Ds and a Nakajima LB-2 from the Japanese Navy

Kown Serial Numbers (Registrations) of MKKK Aircraft

Type	Numbers
DH 80A Puss Moth	M-21
Messerschmitt Bf 108 Taifun	M-58, 65
Bücker Bü 131B	M-81 to 84
Super Universal/Manko 1 Type	M-104, 105, 109, 113, 117 to 183
Super Universal/Manko 2 Type	M-154
Nakajima AT-2	M-201
Junkers Ju 86Z	M-212 to 224 (225)
Fokker D XVI	M-301
Fokker C VE	M-302
DH 85 Leopard Moth	M-303
Manko MT-1 Hayabusa	M-304 to 338
Fokker F VII-3m	M-501, 502
Northrop 2F Gamma	M-506
Mitsubishi MC-20	M-601 to 604
Clark GA-43	M-701

in 1937. Two Heinkel He 116As were acquired for a new Hsinking-Tokyo service and were delivered to MKKK in May 1938 and in March MKKK opened a flying school with Tachikawa Ki.9 trainers.

On 18 December 1936 a secret co-operation agreement was signed by directors Tsuneo Kodawa and Hirao Mugita with the German Lufthansa Company and this contact paved the way for further aircraft acquisitions from Germany. An new route between Berlin and Tokyo over Rhodos, Baghdad, Kabul and Manchukuo was to be opened together with a third "paper" company, the Kaizu Koku Konsu (East China Airline Company) that was eventually not founded. The plan included a partail Japanese take-over of Eurasia as well.

Three Junkers Ju 86Z-2s were ordered by MKKK about October 1937 and this contract was followed by another for 10 aircraft about September 1938 and four more were ordered in April 1939. These aircraft were purchased through a barter deal in exchange for Manchurian soybeans. The first example arrived at Talien in August 1938 and on 7 September it was brought to Mukden and assembled. A total of seven were delivered in 1938 and another seven arrived in 1939, but the remaining three were not delivered due to the outbreak of the Second World War. Five Focke-Wulf Fw 200KC-1 Condors that had been ordered for MKKK in December 1938 suffered the same fate.

During the war between the Soviet Union and Japan in the summer of 1939 (the so-called Nomonhan Incident) MKKK aircraft were impressed as military transports and one Bf 108 and three Fokkers were destroyed by Soviet attacks. It was at some stage planned to convert six Ju 86s into bombers, but this was not carried out, although one was tested with armament fitted.

On 1 October 1939 a direct Ju 86 service between Hsinking and Seoul was opened and later the following routes between Manchukuo and China were added: Mukden-Chinchow-Tientsin-Peking, Chengteh-Changchakow-Tatung-Howhu-Paotou and Chengteh-Tolum-Changchiakou. At least six Mitsubishi MC-20s were obtained in 1941 and a direct service to Tokyo with this type was opened on 1 April 1941. MC-20 M-604 was lost in a crash on 21 June 1941.

The Fokker D XVI fighter (top) and Fokker C VE (bottom) were present at Mukden for demonstrations in 1931 and were seized by the Japanese. They were later allotted Manchukuo registration numbers M-301 and M-302.

A few ex-military aircraft were obtained by MKKK, the Mitsubishi Ki.30 and Kawasaki Ki.32 in 1938, the Mitsubishi Ki.21 (at least six) in 1940, and the Mitsubishi Ki.57 (at least three) in 1943. Nothing is known about MKKK during the Second World War, but several Ju 86s were reportedly still airworthy by August 1945. Russian troops landed on Mukden airport on 19 August 1945 and any aircraft still remaining were shared between the USSR and China.

Manchukuo Air Force Nakajima Ki.43.

MKKK Fleet List

Type	Quantity	Year	Remarks
Fokker F VII-3m	2	1932	Ex JATCo
Fokker Super Universal	>18	1932	Incl Manko-built aircraft
DH 80A Puss Moth	>27	1932	Incl Manko-built aircraft
Fokker D XVI	1	1932?	Originally intended for Manchurian A/F 1931
Fokker C VE	1	1932?	Originally intended for Manchurian A/F 1931
Clark GA-43	1	1934	Ex J-BAEP
Northrop Gamma 5D	1	1936	Ex Japanese Navy
Nakajima AT-2	12	1936	
Nakajima LB-2	1	1937	Ex Japanese Navy
Junkers Ju 160D	2	1937	Ex Japanese Army
Messerschmitt Bf 108D Taifun	19	1937	
Manko MT-1 Hayabusa	30-35	1937	
Manko MT-2	1	1938	
Heinkel 116A-0	2	1938	Ex J-EAKF (Kwantung Government Office), J-BAKD
Junkers Ju 86Z-2	14	1938	Another 3 ordered but not delivered in 1939
Tachikawa Ki.9		1938	
Mitsubishi Ki.30		1938	
Kawasaki Ki.32		1938	
Focke-Wulf Fw 200KC-1	5	—	Ordered in December 1938, not delivered
Mitsubishi Ki.21	>6	1940	
Mitsubishi MC-20	>6	1941	
Mitsubishi Ki.57	>3	1943	

Manchukuo Air Force

The Manchukuo Air Force[1] was established in February 1937 and 30 men from the Manchukuo Army were selected for flying training by the Japanese in Harbin. The first air unit was formed at Hsinking under the command of Lieutenant Uta. Initially there was only one aircraft, an old Japanese-built Nieuport ND 29 (Type Ko-4) biplane. Kawasaki Type 88 bombing and reconnaissance aircraft and Nakajima Type 91 Fighters were later supplied from Japan and three Manko MT-1 Hayabusa transports were also acquired.

The 2nd air unit was established at Mukden and the 3rd at Harbin around 1938-1939. In July 1940 an Air Defence Headquarters, renamed Air Unit Headquarters in 1941, was set up at Hsinking. In August 1940 the Manchukuo Army Flying School (Director: Chen Chang-tso) was established in Mukden for the training of both military and civil pilots.

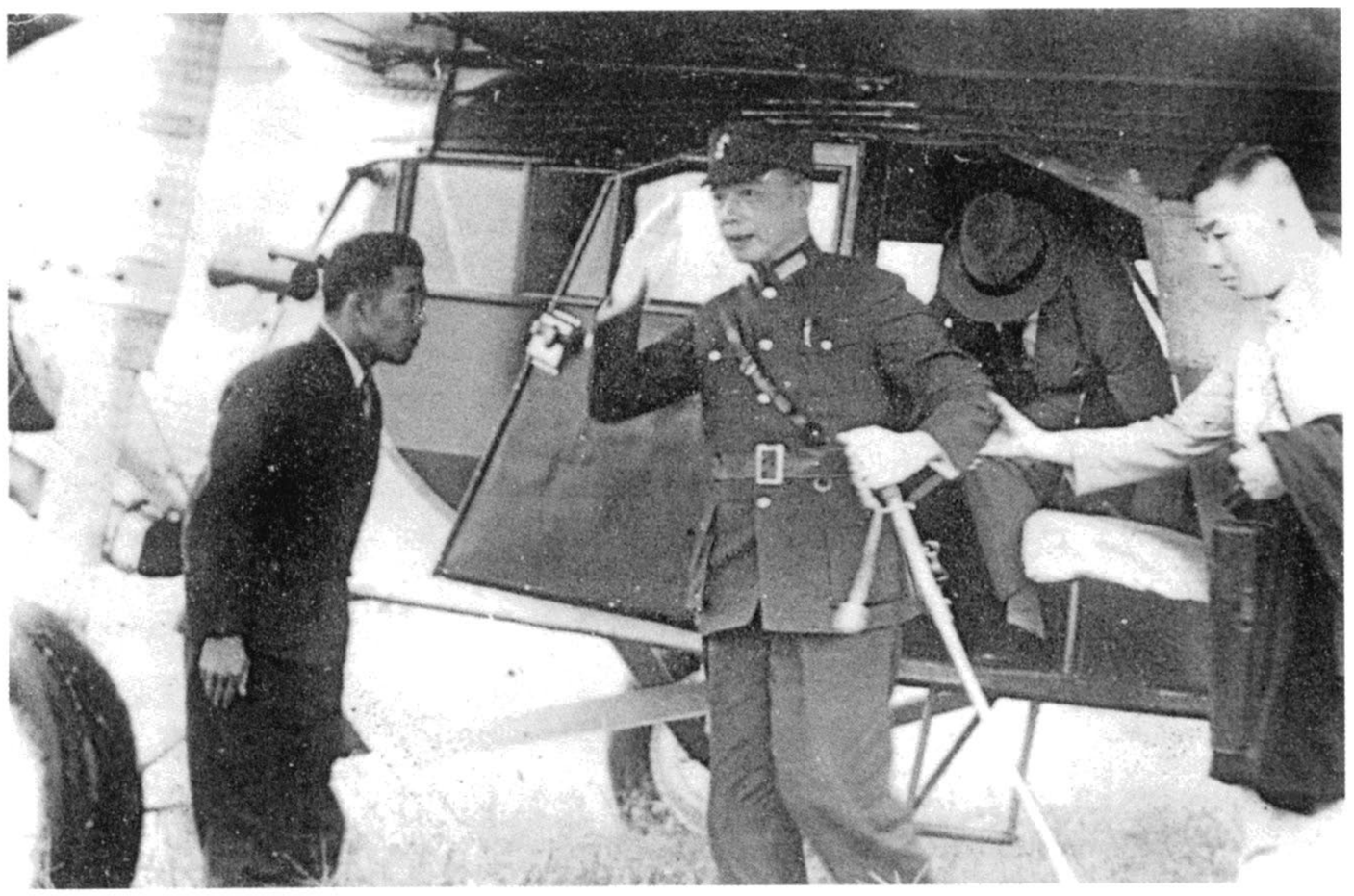
In addition to the three air units at Hsinking, Mukden and Harbin, there was an independent air unit at Tongliao. An air unit theoretically had three squadrons, each with about 12 Japanese and Chinese officers, a similar number of non-commissioned officers and approximately 90 soldiers. In 1942 a new squadron was created at the Flying School and this was later followed by another two squadrons. From 1944 the whole Manchukuo Air Force belonged to the Japanese 2nd Air Army.

During the whole period between 1941 and 1945 the main equipment of the Manchukuo Air Force was the Nakajima Ki.27 Type 97 Fighter. They were of course much inferior to the B-29 bombers they encountered, but in December 1944 a B-29 was reportedly destroyed by a Manchukuo Ki.27 in a Kamikaze attack. Nakajima Ki.43 and Ki.44 fighters were requested but were supplied only in 1944 and just in small numbers.

Tachikawa Ki.9 KAI trainers were delivered in 1940, and

[1] Also known as the Air Corps of the Manchukuo National Military Force.

Many Fokker Super Universals were used by the Manchukuo airline, but same of them had been built locally.



Wang Ching-wei of the Nanking Government used aircraft for travelling, in this case a Fokker Super Universal.

other types used during the war included the Kawasaki Ki.32, Tachikawa Ki.36, Mitsubishi Ki.51, Tachikawa Ki.54a, Tachikawa Ki.55, Manshu Ki.79a and Manko 2 Type. When the Soviet Union invaded Manchuria in 1945, the 2nd Air Army ordered Kamikaze attacks against Soviet tanks, but the war ended before any such attacks were executed. All Manchukuo aircraft were captured by the Soviet forces and many were later issued to the PLAAF.

The Manchurian Coast Guard based at Eikou used two Gasuden KR-1s (Fox Moth) from about 1934, and a single Gasuden KR-2. The Manchukuo Aeronautical Association acquired a pair of Bücker Bü 131B Jungmann aerobatics trainers in 1938. The Japanese police forces in Manchuria (Kwantung Provincial Bureau Police Department) used a number of civil-registered aircraft from 1932. Examples: DH 82A Tiger Moth J-APAE and DH 83 Fox Moth J-APBE. Puss Moths were used by the Japanese police at Darien for airborne railway patrol in 1933.

Nanking

The Japanese Central China Area Army set up a new Chinese government in Japanese-occupied Nanking on 28 March 1938. It was called the Reformed Government of the Republic of China and was headed by Liang Hung-chih. It used the old five-coloured Chinese flag. Wang Ching-wei, a prominent KMT political figure, entered into secret negotiations with the Japanese in December 1938 and in March 1940 he defected from Chungking to Nanking. On 30 March he set up a new puppet government there, which used the KMT flag and symbols.

Several CAF aircraft deserted to Nanking. On 10 June 1940 pilot Tan Shih-chang took off from Chungking with a Beech 17 of the Air Transport Squadron and flew it to Nanking. On 5 October 1940 Captain Chang Ti-Chin flew a Tupolev SB bomber of the 1st Squadron (s/n 0202) from Chungking to Ichang, and then continued to Nanking via Hankow. The crewmembers were called "supporters of President Wang Ching-Wei's policy of peace" in the Nanking press.

The nucleus of a Nanking Government air force, three Tachikawa Ki.9 Kai training aircraft, were purchased "with the aid of the Japanese Army" and entered service on 15 May 1941 when a ceremony was held at the capital. The Military Commission of the Nanking Government sent a mission to Japan for a month of studies in aviation.

In June 1941 the three trainers arrived at Changchow, where a formal inauguration of the aerodrome and the Special Service Aviation Squadron, which absorbed the former "aviation training classes" held there, took place on 1 October 1941. Preparations to form a Central Aviation School started. In addition to acquiring a few training and transport aircraft, probably including Japanese-built Avro 504 trainers, the school placed an order for "a few scores of army and naval planes" from Japan. The Nanking Government also negotiated with the Central China Aviation Company about the return of nine transport aircraft to Nanking.

In September 1942 Yao Hsi-chiu[2], Director General of the Aviation Bureau of the Nanking Military Affairs Commission, formed an Air Force Training Corps. In 1943 the Japanese allegedly supplied three Tachikawa Ki.54 twin-engined transports and after the end of the war a defecting pilot flew one to Communist-held territory. It arrived in Yenan on 20 August 1945 and was numbered 820 when taken over by the Communist Air Force. The Nanking Air Force possibly used other Japanese types as well, but ceased to exist in August 1945.

Three Tachikawa Ki.9 Kai trainers entered service with the Nanking Government air force on 15 May 1941.

[2] Yao Hsi-chiu replaced Cheng Chan-tsu, who had been appointed head of aviation in Nanking in 1940.

The Civil War Period until 1949

When the war ended in 1945 Soviet forces controlled Manchuria and the Chinese Communist forces held the adjoining territories in the north of China. The Nationalists were confined to the west and south of the country, but the USA ordered that Japanese troops were only to surrender to officers designated by Chiang Kai-shek. Air and sea transport was provided in order to move Nationalist troops into North China to reoccupy the major cities and CNAC and CATC aircraft were used to transport Government officials. Japanese troops actually held the cities against the Communists until the Nationalists arrived and many of the puppet government troops went over to the Nationalists.

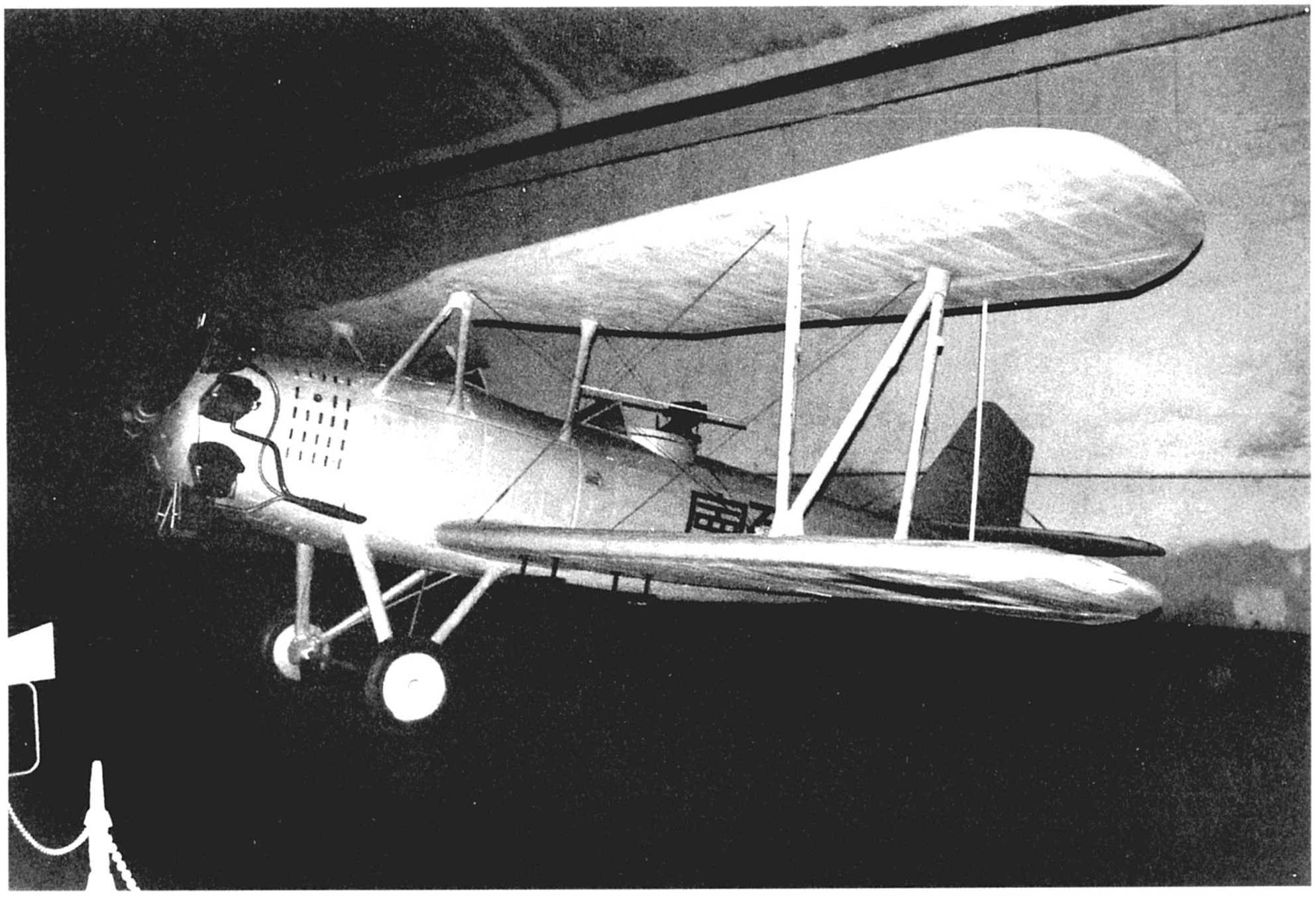
The Soviet troops stayed until January 1946 and meanwhile captured Japanese equipment, including aircraft, was turned over to the Communist forces in Manchuria. At the beginning of the Civil War the Nationalists had a great superiority in numbers of aircraft and other equipment, but supply and maintenance problems soon reduced this advantage. The Communists expanded their People's Liberation Army (PLA) as rapidly as possible and much equipment was captured from the Nationalists.

The Nationalists took Shenyang (Mukden) in January 1946 and occupied central Manchuria in May. In March 1947 they took Yenan and on 5 May 1947 the National Government was reinstalled in Nanking. Later in the year the PLA took the initiative. They started an offensive in Shantung and by October 1948 the whole of Manchuria was in their hands. Nanyüan airport was captured in December 1948. Tientsin and Peking were taken in January 1949, Taiyüan and Nanking in April and Shanghai in May. The loss of Nanking forced the National Government to move to Canton.

The People's Republic of China was proclaimed on 1 October 1949. On 15 October the PLA entered Canton and the Nationalist Government once again moved to Chungking, where they held out until the end of November. The Government then fled to Chengtu, and on 8 December it was decided to move to Taipei on Taiwan. Chiang Kai-shek flew there on 10 December. By the end of the year most of China was under PLA control and the Nationalists had taken refuge on Taiwan.

The CAF

The National Military Council and the Ministry of War were reorganised into the Ministry of National Defence in June 1946. By that time the CAF inventory was made up of the American types supplied under Lend-Lease during the war and after V-J Day. In September 1945 the US



A Chinese Air Force Vought V-65-C Corsair force-landed in Communist territory in Hupei on 28 February 1930 and was captured. This is a replica of that aircraft.

Government had declared that all Lend-Lease supplies earmarked for China on American inventory in China and India or enroute to Indian ports on V-J Day were to be delivered as planned.

In December 1945 the US Government decided that materials in the Burma-India Theatre that were no longer needed were to be transferred to China under military Lend-Lease during a six-month period ending 2 March 1946. Aircraft deliveries continued, however, but were temporarily suspended by an embargo that was in force between August 1946 and May 1947.

The North American P-51 Mustang equipped the 3rd, 4th and 5th Fighter Groups. The 11th Fighter Group operated the Curtiss P-40 Warhawk, but this type was replaced by Republic P-47D Thunderbolts acquired in 1946. By the end of 1948 there were 29 P-47Ds and 51 P-47Ns and another 34 P-47Ns were delivered a little later. Additional P-51s arrived in 1949 as well.

The 12th Squadron was equipped with the Lockheed F-5 Lightning for photographic reconnaissance and a few North American F-10 Mitchells were delivered to this unit from the USA in 1948. The North American B-25 Mitchells were concentrated in the 1st Bomber Group (1st, 3rd and 4th Squadrons), but they passed on to the 9th Squadron in 1948, when 205 de Havilland Mosquito fighter-bombers were received from Canada for the 1st Bomber Group. Most Mosquitoes were FB Mk 26s, but many were T Mk 27 and T Mk 29 trainers and there were also a few B Mk 25s and T Mk 22s. A large number of this type was lost in accidents. The 8th Bomber Group operated the Convair B-24M Liberators received in 1945 (37 additional aircraft ordered in 1948 were not delivered) and three of the C-87 transport version delivered in 1946.

The 6th Fighter-Bomber Group used a number of captured Japanese aircraft until being disbanded in June 1946. Its 5th Squadron was equipped with the Ki.48 bomber and the 18th and 19th Squadrons with Ki.43, Ki.44, Ki.61 and Ki.84 fighters.

In 1946-48 many Curtiss C-46 and Douglas C-47 transports were added to those already in service with the 10th and 20th Air Transport Groups and a single Douglas C-54 was delivered in 1945 for VIP use. There were 126 C-46s in September 1948 and at least 100 more were delivered before the end of the year. Stinson L-5 Sentinel liaison aircraft arrived in 1946 and 1948, when at least 56 were added to the 11 already in service. Seventeen Piper L-4s were supplied to the CAF early in 1949 and four Cessna 195s late the same year.

Trainers included North American AT-6 Texans (about 12 additional received in 1948), Stearman PT-17 Kaydets, Fairchild PT-19 Cornells (about 10 added in 1948), Ryan PT-22 Recruits, Beech AT-7 Navigators and Cessna AT-17 Bobcats (also the UC-78B transport version). There were plans to build 130 PT-17s in China, but this was probably not realised.

In November 1945 Chiang Kai-shek had asked the United States to authorise completion of the wartime Chinese training programme in the USA and the transportation required for this. By that time not less than 2,260 CAF personnel were undergoing training, 192 were enroute and 1,285 were in China awaiting transportation for such training. The CAF's own training schools were scheduled to commence training in May 1946. The request was approved almost immediately.

Total Number of Aircraft, September 1948

29	B-24M (37 on order, in Hawaii)
24	B-25
4	F-10 (B-25)
150	Mosquito (more on order)
10	P-40
80	P-47 (79 on order, in the Pacific)
139	P-51 (52 on order, in the Pacific)
11	F-5 (P-38)
46	AT-6 (75 on order, in the USA)
8	AT-7 (65 on order, in the USA)
11	AT-17
5	BT-13 (137 on order, in the USA)
90	PT-17 (211 on order)
58	PT-19
14	PT-22
11	L-5
8	C-43
126	C-46
45	C-47
1	C-54
2	C-87

An order for 150 North American AT-6 Texans from a private company in the USA was placed, but these aircraft do not seem to have reached the CAF before the move to Taiwan. Six more were to have been built in China. Large orders for trainers placed in 1948 (211 PT-17s, 75 AT-6s, 65 AT-7s and 137 BT-13s) were not delivered, but at least 21 Beech AT-11s were received just before or during the move to Taiwan.

Vought V-65-C Corsair.

CAF Order of Battle, September 1948

1st Medium Bomb Group
3rd Squadron (11 B-25), Peking
4th Composite Squadron (36 Mosquito, 4 B-25), Hankow*
9th Squadron (8 B-25), Hsian

8th Heavy Bomb Group
33rd Squadron (9 B-24), Shanghai
34th Squadron (10 B-24), Shanghai
35th Squadron (10 B-24), Shanghai
(2 C-87), Shanghai

3rd Fighter Group
7th, 8th and 28th Squadrons (ca 31 P-51), Hsuchow and Chinan

4th Fighter Group
21st Squadron (19 P-51), Peking, Chinan and Mukden
22nd Squadron (18 P-51), Peking, Chinan and Mukden
23rd Squadron (17 P-51), Peking, Chinan and Mukden

5th Fighter Group
17th Squadron (20 P-51), Chinan
26th Squadron (17 P-51), Nanking
27th Squadron (17 P-51), Tsingtao

11th Fighter Group
41st, 43rd and 44th Squadrons (29 P-47, 4 P-40), Taiyüan, Hsinhsiang and Hsian

12th Photo Reconnaissance Squadron, Nanking (7 F-5) and Peking (4 F-5, 4 F-10)

10th Air Transport Group
101st Squadron (25 C-46), Shanghai
102nd Squadron (20 C-47), Peking
103rd Squadron (20 C-46), Peking
104th Squadron (25 C-47), Nanking

20th Air Transport Group
2nd Squadron (20 C-46), Shanghai
6th Squadron (20 C-46), Shanghai
11th Squadron (20 C-46), Shanghai
30th Squadron (20 C-46), Shanghai

* Formerly 1st and 4th Squadrons

On 25 February 1946 a Joint united States Military Advisory Group (JUSMAG) was established with an Air Advisory Group of 83 officers and 166 enlisted men. The aviation advisers were headed by John P McConnell, later replaced by Charles E Thomas, and remained in China until January 1949. The JUSMAG Air Advisory Group was activated in April and its purpose was to organise, train and equip all CAF units.

CAF serviceability became lower and lower and after September 1948 large losses were sustained, principally due to ground accidents, abandonment of aircraft on airfields captured by the Communists and defection of CAF pilots. Much of the CAF and the Navy was evacuated to Taiwan, but many aircraft were captured by the PLA and quite a number of Nationalist pilots defected with their aircraft. Already by March 1949 the most of the air units had moved to Taiwan. According to an American intelligence report only parts of the 1st Medium Bomb Group (Nanking and Hankow), 3rd Fighter Group (Nanking) and 5th Fighter Squadron (Nanking and Canton) were still based on the mainland. The last mainland CAF aircraft were probably six B-25s and seven armed AT-6s stationed at Haikow, Hainan Island.

PLAAF

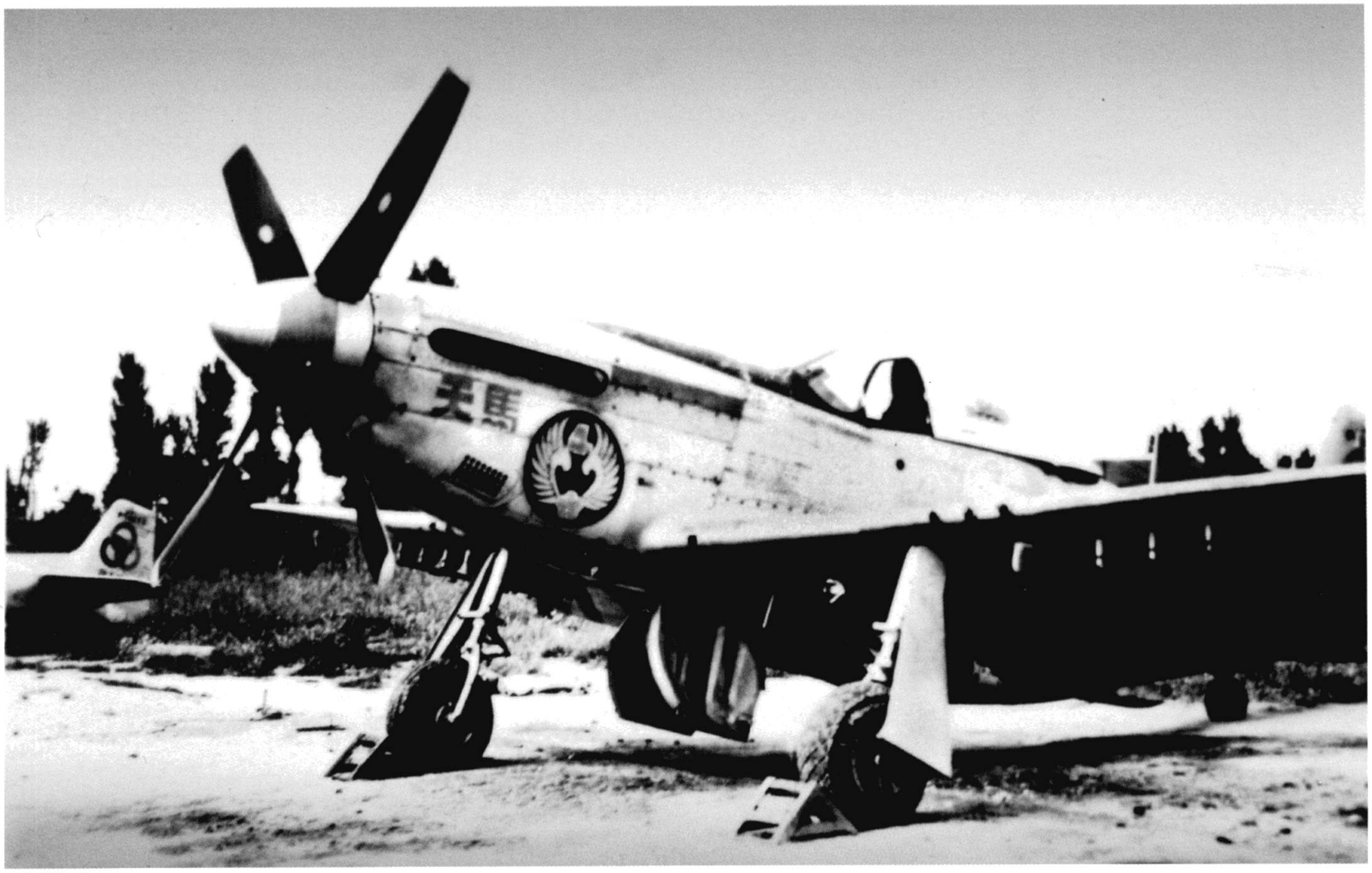
A CAF Vought V-65-C Corsair force-landed in Communist territory in Hupei on 28 February 1930 and was captured. It was named "Lei Ning" (Lenin) and was used for reconnaissance and liaison flights until it was dismantled in July 1932. The pilot, Lung Wen-k'uang was appointed head of the local aviation bureau. On 20 April 1932 a second aircraft, this time a damaged CAF Douglas O-2MC, was captured at Changchou. It was repaired and named "Marx", but was apparently little used.

These two captured aircraft are today regarded as the first beginnings of the air force of the People's Republic of China, but it would be along time before the Communists formed any proper military aviation organisation.

In March 1941 an Air Force Engineering School was established at Yenan and in May 1944 an aviation section of the Central Committee's Military Commission was organised. Both were headed by Chang Ch'ien-k'un and Wang Pi. In July 1944 an American team arrived at Yenan to discuss possible deliveries of American aircraft and it was suggested that some of the supplies destined for Chiang Kai-shek should go to the Red Army for use against the common enemy, Japan, but these plans were never realised.

What became known as the Air Force of the PLA (People's Liberation Army) acquired its first aircraft by capturing Japanese machines and in addition a large number of Japanese aircraft were captured by the Russians in Manchuria and then handed over to the PLA. Ki.43, Ki.44, Ki.61 and Ki.84 fighters, Ki.45 twin-engined fighters, Ki.30 and Ki.51 attack aircraft, Ki.48 bombers, Ki.54 and Ki.57 transports, and Ki.55, Ki.79 and Ki.86 (Bücker Bü 131) trainers were acquired in this way. In September 1945 personnel were sent by the Aviation Section at Yanan to establish the so-called Northeast Old Aviation School. When the first class began in July 1946 many of the instructors were Japanese pilots who had elected to stay in China after the capitulation.

A number of American types were captured from the



North American P-51D Mustang named "Sky Horse". (CAHC)

CAF and some CAF aircraft, including three B-24M Liberators, defected and went into service with the PLA Air Force. The first such aircraft was a B-24M, which was flown to Yanan in June 1946. P-47D and P-51D/K fighters, Mosquito fighter-bombers, B-25 bombers, C-46 and C-47 transports, L-5 liaison aircraft, and PT-17, PT-19 and AT-6 trainers were captured when the Nationalists left the mainland in 1949. According to an American intelligence report dated 1 April 1949 the PLAAF had three B-24s, three B-25s, nine Mosquitoes, a single P-47, eight P-51s, nine C-46s, two C-47s, one AT-11 and a pair of unidentified trainers at their flying school at Chiamussu in Manchuria. A later report added an AT-6, an AT-17, a pair of PT-19s and an L-5.

On 17 March 1949 an Aviation Bureau was formed with Chang Ch'ien-k'un as Director. A Soviet Military Mission arrived in July 1949 and a Chinese aviation commission went to Moscow in August to acquire new aircraft. A preliminary agreement was signed on 18 August and Major General D Prutkov was appointed Chief Adviser to China. A group of Russian advisers arrived in October and the first Soviet aircraft in the form of Polikarpov Po-2 and Yakovlev Yak-18 trainers, Yakovlev Yak-12 liaison aircraft, Lavochkin La-9 and La-11 fighters and other types were received at the end of 1949.

The PLAAF formally established its headquarters in Peking on 11 November 1949 and Liu Ya-lou, who had led the Chinese delegation to Moscow in August, was appointed commander. The first regular unit, a squadron with six P-51Ds, two Mosquitoes and two PT-19s had been established in July 1949 in Peking and by December the PLAAF possessed 159 aircraft of 21 different types.

Civil Aviation After 1945

After the end of the Second World War it was felt that a reorganisation of the China National Aviation Corporation (CNAC) was needed and an agreement to create a new company with the same name[1] was signed with Pan American on 21 November 1945. It was ratified by the Government on 8 December. In January 1945 Pan American Airways had taken over all CNAC shares from its subsidiary China Airways (dissolved in December 1944) and most of these shares were now sold to the Chinese Government. Pan American only held twenty per cent of the shares in the new CNAC.

Seven Douglas C-54 four-engined transports (registered XT-T-01 to T-07) were acquired and delivered in 1946-47 and in 1947 the CNAC aircraft fleet was reported to comprise six C-54s, 17 C-47s and 18 C-46s. Five North American AT-6F Texans were obtained and used for meteorological and training flights.

In 1946 CNAC opened services to Taiwan, Hainan Island and Manila and in 1948 a number of international

1 China National Aviation Corporation (Ho-tsu Chung-kuo hang-k'ung ku-fen yu-hsien kung-ssu).

destinations were added to the network; Honolulu, San Francisco, Bangkok and Singapore. The head office was moved to Hong Kong in December 1948 and due to the Civil War all operations were halted on 17 August 1949 and most of the aircraft were evacuated to Hong Kong. CNAC was finally sold to the Chinese Government in a formal deal dated 31 December 1949.

In August 1945 the Chinese Government sold 20 percent of its interest in the Central Air Transport Corporation (CATC) to private Chinese financial groups. At the end of the year this company purchased 10 C-47s, a C-53 and two AT-6F Texan trainers from USAAF stocks in India and in 1946 almost 150 C-46s and C-47s were acquired, of which 27 C-46s, 14 C-47s and one C-53 were used. The rest were scrapped in 1947. Other acqusitions were one AT-6D Texan, one Stinson L-5C Sentinel and a pair of Noorduyn UC-64A Norsemans. In addition CATC had received three Mitsubishi MC-20s and three Japanese-built DC-3s (ex-China Airways), but they were worn out and ended up as spare parts. In 1947-48 five second-hand DC-3s were purchased in the USA and in July 1947 six new Convair 240s were ordered. They were delivered in the summer of 1949.

The company's head office moved from Shanghai to Canton in May 1949 and to Hong Kong in October and most CATC aircraft were evacuated to Hong Kong. However, on 9 November 1949 eight C-47s, three C-46s and a Convair 240 were flown to Tientsin and turned over to the new authorities in Peking. Ten of these 12 aircraft belonged to CNAC and two to CATC. Already on 25 August a Chinese co-pilot had defected with a C-47 and on 27 October another CATC C-47 had been spirited away. A large number of air and ground crew later went over to the People's Republic.

The Soviet-controlled Hamiata company continued to operate after the end of the war with a few Soviet-registered Douglas C-47s, but in July 1948 the Chinese side decided that the ten-year Soviet-Chinese agreement should come to an end on 9 September 1949. An extension for five years was agreed upon locally at Tihwa on 31 May 1949, but by that time the Nationalist Government had lost control over most of China.

On 25 October 1946 the Chinese Government signed a contract with Claire Chennault and Whiting Willauer, who had proposed to start a freight and passenger transport service for the United Nations Relief and Rehabilitation Ad-

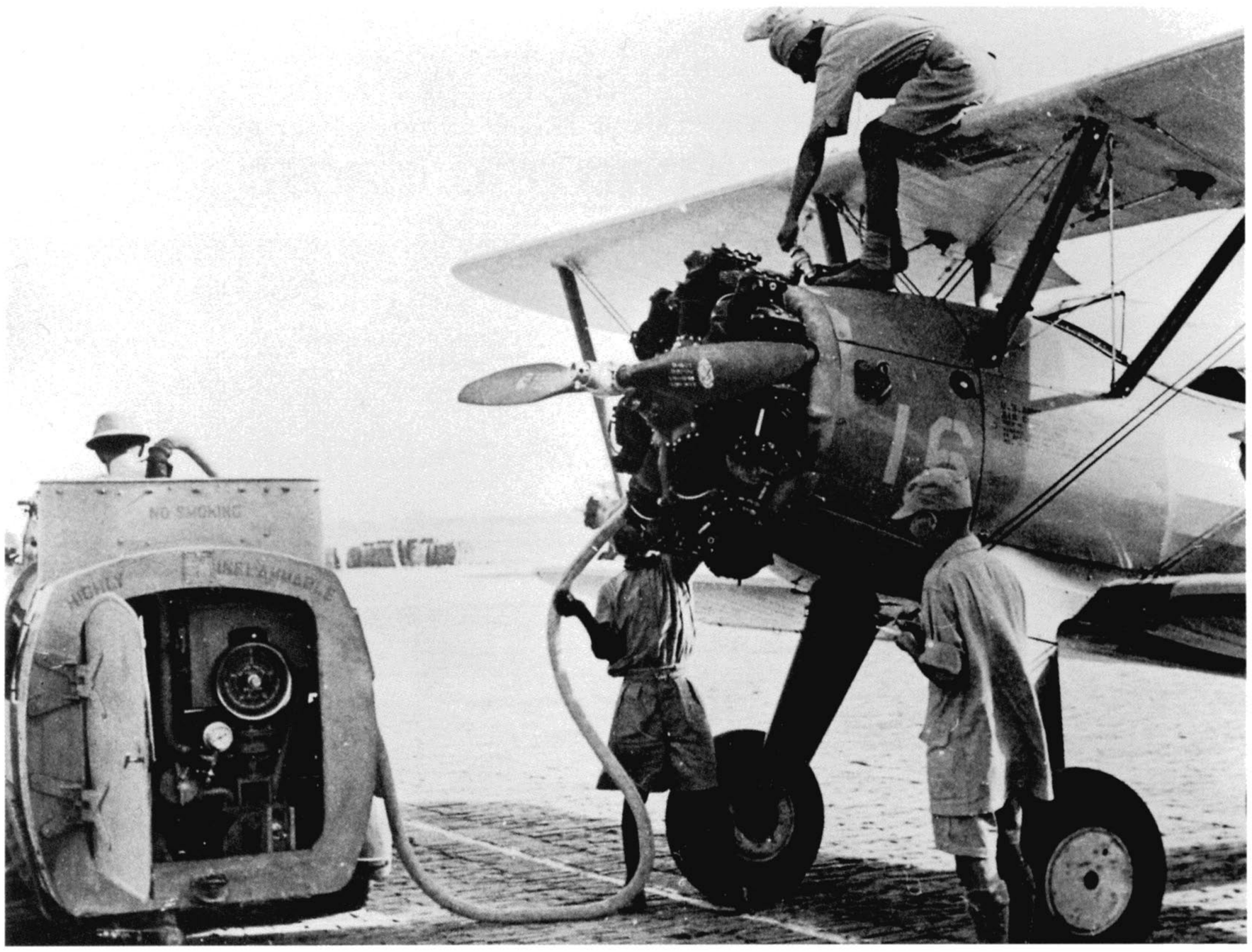
CATC Aircraft Fleet Numbers

Douglas C-47, A, B	1-3, 5-11, 29, 31, 32-36*, 38-39, 41**, 42, 43, 47, 48, 50, 54, 56, 57, 59
Douglas C-53	4, 62
North American AT-6F	12, 14
North American AT-6D	30
Curtiss-Wright C-46A, D, F	15-24, 27, 37, 40, 44-46, 49, 51-53, 55, 58, 60, 61, 63-65
Noorduyn UC-64A	25-26
Stinson L-5C	28

* Belonged to another company and were never taken over by CATC.
** Belonged to the American Lutheran Mission, named "St Paul".

One of the Kawasaki Ki.48 bombers captured from the Japanese and used by the Nationalist Air Force. General Lowe Chung-yang and 6th Group. (Gen Lowe Chung-yang)

In September 1948 the CNAF had 90 Stearman PT-17 Kaydets on the inventory and 211 more were on order.



ministration (UNRRA). The UNRRA needed to transport relief supplies into China and its Chinese counterpart, the China National Reconstruction and Relief Administration (Hsing-cheng-yüan shan-hou chiu-chi tsung-shu k'ung-yün ta-tui), or CNRRA, was to purchase the aircraft and hire personnel with money allotted by the UNRRA.

The CNRRA Air Transport Company's main base was Canton and later Shanghai. Operations started on 31 January 1947 with 15 C-46Ds that had been obtained in the same month. About 10 C-46Ds were acquired in May 1947 and at least six C-46Fs were purchased in Japan in May 1948. The company also had three C-47s and probably ten Cessna 195s.

CNRRA Air Transport was liquidated on 21 December 1947 and a new contract was signed with the Chinese Government on 2 January 1948. Civil Air Transport (Min-hang k'ung-yün tui, CAT), founded on 28 May 1948, took over the fleet and personnel of CNRRA.

After the fall of Shanghai CAT moved back to Canton in May 1949 and operated a Kunming-Chungking airlift. It moved from Canton to Hong Kong on 11 October and to Taiwan on 16 December and on 15 January 1950 this company acquired remaining CNAC and CATC assets with the support of the American Central Intelligence Agency (CIA).

A large part of the CNAC and CATC personnel and the compnies' top executives sided with the People's Republic in 1949 and, as already described, 12 of the evacuated aircraft were flown by their crews to mainland China on 9 November. In December Chennault and Willauer purchased the Government shares in CNAC and CATC and registered all remaining CNAC and CATC aircraft in the USA: 18 C-46s, 19-21 C-47s and six Convairs from CATC, at least 31 C-46s, 14-15 C-47s and five C-54s from CNAC, and 20 C-46s and two C-47s from CAT. Their Chinese registrations had been suspended on 13 November.

It took three years to get the aircraft released from their internment in Hong Kong, however, and only in July 1952 were 40 CNAC aircraft awarded to CAT and in October the same year 31 to CATC.

Civil Aircraft Registrations

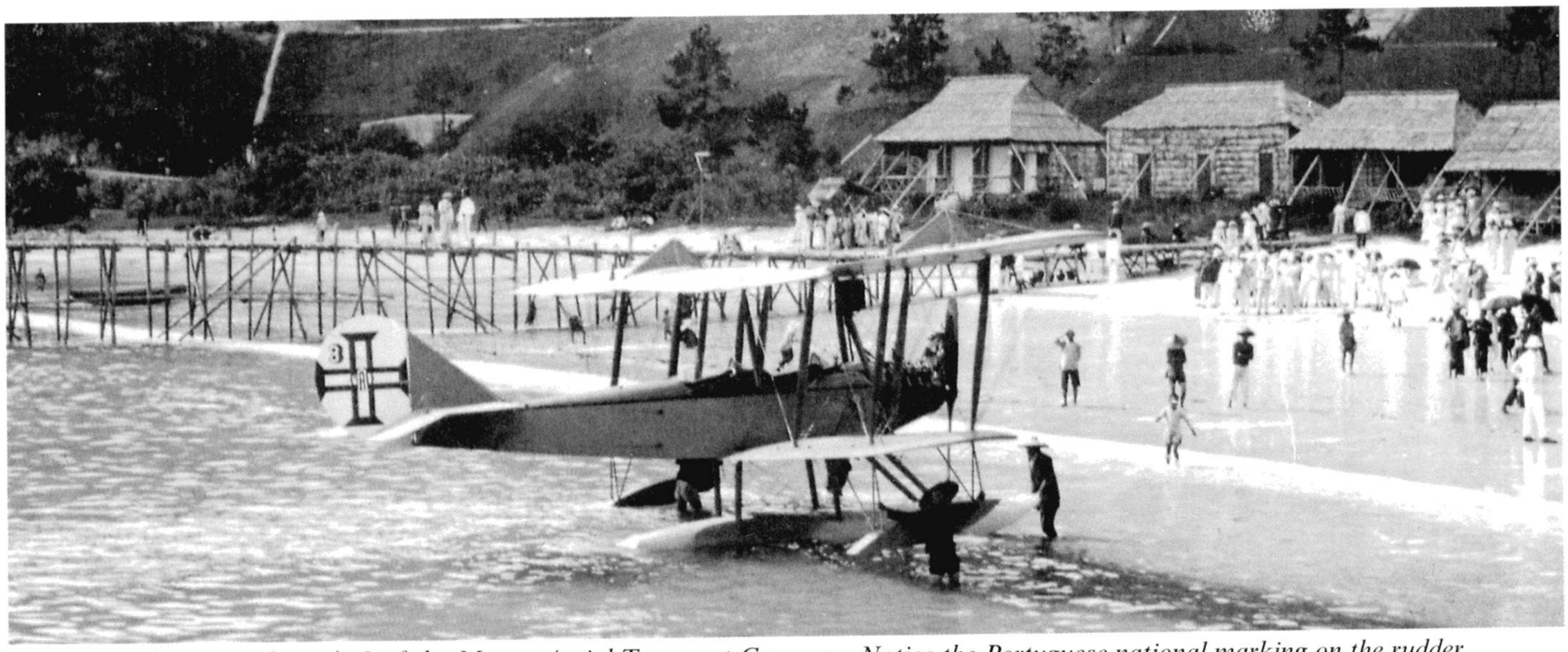
In 1948 a new registration system was introduced.

Examples of CNAC aircraft:
C-46 XT-13, XT-50, XT-114 to 124, 130, 136, 140 to 144, 148, 154 to 172 (even numbers)
C-47 XT-45, XT-92, XT-111, 115 to 133, and 137 to 141 (odd numbers)
C-54 XT-101 to 107
AT-6F XT-401, 402, and 411
PBY-5A Catalina XT-147

Examples of CATC aircraft registrations:
C-46 XT-500 to 546 (even numbers)
C-47/DC-3 XT-501 to 517 and 521 to 543 (odd numbers)
Convair 240 XT-600 to 610 (even numbers)

Examples of CAT aircraft registrations:
C-46 XT-802 to 830, 836, 840, 844, 846, 850, 854 and 864 (even numbers)
C-47 XT-801 to 829 (odd numbers)
Cessna 195 XT-885 and 889

Aviation in Hong Kong and Macao



Aeromarine 39B floatplane s/n 3 of the Macao Aerial Transport Company. Notice the Portuguese national marking on the rudder.

Americans aviators Baldwin, Schriver and McBride arrived in Hong Kong in December 1910, but were unable to get a permission to fly in the colony. Belgian pilot Charles Van den Born was more successful and on 18 March 1911 he was able to make the first powered flight in Hong Kong with his Farman named "Wanda".

Lim On, a Canadian-Chinese businessman, was the first student of the "Keng Wah Aviation School" at Saskatoon in Canada. He purchased a two-seat Curtiss JN-4C Cannuck biplane in March 1920 and travelled to Hong Kong with this aircraft. Early in 1921 he started to fly the JN-4 there, aided by Canadian mechanic Harry Rowe, but he crashed on 17 April 1922 and after that the aircraft it was stored[1].

The Macao Aerial Transport Company

French Captain Charles E W de Ricou[2], manager of the Macao Electric Light Company, was the driving force behind the Macao Aerial Transport Company (MATC), which was formed in January 1920 as a subsidiary of the Far Eastern Aviation Company. The company's first aircraft, a three-place Curtiss Seagull flying-boat, arrived from Manila on board the SS "Africa Maru" on 16 February 1920. It was erected in Hong Kong and an experimental, non-scheduled Hong Kong-Macao flight was made on the following day by Major J E H Stevenot, local Curtiss representative, with Ricou as passenger.

While on a visit in the USA in 1919 Ricou had purchased five Curtiss H-16 flying boats, two Curtiss HS-2L flying boats with wireless equipment, three Aeromarine 39B floatplanes, a single Boeing seaplane, a hangar, engine shop machinery, spare parts and ten extra engines. He was in fact reported to have contracted to order a total of 135 Curtiss aircraft within three years, but this probably was just in the form of an option.

The general superintendent of the Far Eastern Aviation Company, Walter D Bonner, arrived in Shanghai on 26 February with 18 American aviators, mechanics and specialists. Bonner was also referred to as the Chief Pilot of MATC. On 2 March he and five ex-US Navy pilots, four co-pilots and six mechanics reached Hong Kong[3]. The aircraft arrived with Ricou on board the SS "Dacre Castle" on the following day and were transhipped to Macao. They had been despatched by the Guy T Slaughter Company, San Francisco and New York, who had also selected all MATC personnel.

L A Scotchmer, engineer and superintendent mechanic, five pilots and five mechanics were stationed at Macao, where the hangar was erected and work on the aircraft started. Assembly of five of them, an H-16, an HS-2L and three Aeromarines, was completed in July. The H-16s had to be converted from military aircraft to transports with a 14-passenger layout and the HS-2Ls were converted to carry a pilot and four passengers.

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1 British intelligence reported in April 1921 that Rowe had ordered a second aircraft from Canada, but this has not been confirmed.
2 Although being a French citizen, Ricou was originally born in Hong Kong.
3 These were Roland S Parker, L A Scotchmer, N W Mallory, William S McCormack, William P Smith, H M Broady, Everett Hays, Frank M Van Oudenhoven, Barney Kirstine, Charles Curtin, Owen T Ward, Charles C Havens, Guy C Wilson and D H Ketcham.

On 3 June 1920 one Curtiss HS-2L and three Aeromarines arrived in Hong Kong for sightseeing flights and on 14 August Ricou made a flight to Shanghai with an H-16. At that time the company had 14 pilots and mechanics, including one French pilot. One of the HS-2Ls was still crated and two H-16s had been written off, probably due to damage during shipping and another H-16 was damaged but repairable. On 16 September Ricou and Mallory made a flight to Haiphong with an H-16. There had been plans for Hong Kong-Shanghai and Hong Kong-Foochow services, but nothing of this was eventually realised.

In the autumn of 1920 three MATC pilots were engaged by Canton Governor Ch'en Chiung-ming for his war against Kwangsi and "deserted" from Macao. One was killed, however, when his aircraft was brought down by ground fire in November and the other two returned to the USA at the end of that month.

By June 1921 the MATC was reported to still own nine aircraft and employ 14 pilots and mechanics. Several proving flights had been made, but the company had encountered problems with permits and serious financial difficulties, and was finally closed down.

It seems that some of the MATC aircraft finally ended up in Canton. In March 1921 it was reported that the Canton Government had bought from Ricou two large Curtiss flying-boats with fittings for machine guns and two small hydroplanes (Aeromarine 39Bs?). Another report says that Sun Yat-sen (Canton Government) purchased two Curtiss H-16s, two Curtiss HS-2Ls and two Aeromarine 39Bs through Ricou in January 1922. In addition to this, Ricou managed in December 1922 to sell two Aeromarine 39Bs, including one named "Paco D-Arcos", to the Portuguese Government at Macao.

A photo taken about 1930 in Macao shows the fuselages of two derelict MATC aircraft on a scrap yard: The Boeing Model C and a Curtiss H-16.

The Abbott School

Harry W Abbott, who had earlier served with the Canton Air Force, moved to Hong Kong in March 1924 and purchased Lim On's damaged Curtiss JN-4. He rebuilt it and had it in the air again for the first time on 20 April. He set up the Commercial Air Company with the intention of doing some stunt flying and instruction. He flew from various sites in Hong Kong but crashed the JN-4 on 20 June. In August he acquired a three-seat Curtiss Oriole biplane from the Philippine National Guard in Manila and a Curtiss JN-4D Jenny arrived from the same source in October. He staged an air show in Macao with these aircraft later in the same month.

The Abbott School of Aviation was founded in January 1925 at a site in Hong Kong, which was later to become Kai Tak Airport. William G Bunter was appointed president and a number of aircraft were purchased for the school from the Philippine Government in March 1925: a large twin-engine Curtiss F-5L flying boat and three "smaller Curtiss biplanes". In January it had been reported in the press that an auction was to be held in Manila. Six Curtiss aircraft had been confiscated by customs about three years earlier while on their way from the USA to China and as they had been left unclaimed they were now to be sold. It seems likely that it was some of these aircraft that Abbott purchased. The F-5L arrived in Hong Kong in April and in the following month the Oriole was crashed by one of the school's staff.

The flying school ran into financial difficulties and in August and September 1925 it was attempted in vain to auction one of the still crated Curtiss biplanes. Some time later Abbott managed to sell a Curtiss JN-4D, two Curtiss Orioles (Kirkham K-6 and Curtiss OXX-6 engines), a Curtiss F-5L and two HS-2L flying boats, to Helting, a Dutch pilot who owned the First Dutch Aviation Company together with a person named Brockman. The final fate of these aircraft is not known. Helting arrived in Hong Kong from Dutch India in January 1926 to demonstrate a Caudron biplane (9-cylinder engine) and apparently went on to Shanghai in May.

In the meantime Harry Rowe, Lim On's Canadian mechanic, had started the Hong Kong and Kowloon Taxicab Company. He purchased a Curtiss Oriole from the Philippine National Guard in Manila in August 1924 and flew together with Abbott at the air show in Macao in October.

The Far East Aviation Company and the Aircraft (China)

The Far East Aviation Company (FEACo) was organised late in 1928 in Hong Kong by F R Smith (ex-RAAF) and Wing Commander R Vaughan-Fowler (ex-RAF), who became the company's Managing Director. The company's

A rare photo of a unique aircraft. The sad remains of the only Boeing C in China seen in 1930. It was imported by MATC in 1920.

Avro Avian VR-HAA of the Hong Kong Flying Club.

headquarters were moved to Shanghai in the autumn of 1931. FEACo were agents for the British firms Armstrong Witworth, Avro, Saunders Roe and Westland. In 1929 they imported an Avro Avian seaplane, which was allotted the first Hong Kong civil aircraft registration, VR-HAA. It was intended for demonstrations and was to enable FEACo representative Fowler "to get about with greater speed and comfort", as one local newspaper put it. The company offered a taxi service and late in November sightseeing flights from Kai Tak were advertised.

The FEACo sold a large number of Armstrong Witworth AW 16s, Armstrong Witworth Atlases, Avro Avians, Avro 624s, Avro 626s, Avro 631s, Avro 637s, Saunders Roe Cutty Sarks and Westland Wapitis, mainly to the different Chinese warlord air forces. In addition company pilot A V Harvey apparently acquired an Avian for his personal use, which was registered VR-HBR in December 1932[4].

The FEACo had branches and agencies in South China (Manager A V Harvey), Fukien (Manager G F Jones-Evans), North China (Manager H A Howes) and Canton (Representative A D Bennett). The Spares Department was headed by W F Dudman and the Engineering, Erection and Maintenance Division by V C Higginbotham, H A Mills and W R Hawes.

Vaughan-Fowler retired in 1934 and was replaced by Arthur V Harvey. Orders were diminishing and the FEACo concentrated its efforts on selling aircraft to Kwangsi Province, where they also ran a factory and provided advisers. Aircraft (China) Ltd was set up on 1 September 1934 to take over FEACo's aircraft sales department. Aircraft (China) also represented Gloster and Hawker and took over Fairey from Arnhold & Co, but no new sales were achieved.

The FEACo apparently remained in business, however, because on 24 January 1936 an "ex-RAF bomber" piloted by Flight Lieutenant W F Murray, who was referred to as the head of the FEACo in Hong Kong, crashed into the sea near Macao. Both Murray and his passenger were rescued. The aircraft had been chartered to make a business trip to Hanoi. In 1937 two Airspeed Envoys were sold to Kwangsi via FEACo Manager W F Dudman.

The Hong Kong Flying Club

On 9 July 1920 the Hong Kong Aero Club was formed with P H Holyoak as President, but apparently this club lasted only for a short time.

F C Smith and R Vaughan-Fowler rented land for an aerodrome at Kai Tak in mid-1929 and on 20 December 1929 the Hong Kong Flying Club (HKFC) was formed. W E L Shenton was appointed first President. The Club was formally inaugurated on 31 May 1930 by the Governor of Hong Kong. Flying Officer A D Bennett and Lieutenant E F W Bassett were engaged temporarily for some preliminary

4 VR-HBR was registered on 21.12.32 to A V Harvey. It crashed in 1934 and was cancelled on 19.8.35.

Aircraft of the Hong Kong Flying Club

Reg	Type	C/n	Date	Remarks
VR-HAA	Avro 616 Avian IVM	361	10.3.30	Crashed 6.8.30, cx 11.9.30
VR-HAB	Avro 616 Avian IVM	362	19.8.30	Crashed 10.2.31, cx 10.12.31
VR-HAE	Avro 616 Avian IVM	475	27.11.30	28.5.35 to FEFTS

Two Avro Avians imported by the Far East Aviation Company in Hong Kong.

instruction until the club's Pilot Instructor H A Howes arrived in June 1930. W R Hawes was engaged as ground engineer.

Two Avro Avian two-seat trainers, VR-HAA and HAB, were acquired. VR-HAA crashed during a "crazy flying" exhibition on 6 August, however, and was seriously damaged, the pilot and passenger receiving only minor injuries. A new Avian, VR-HAE, was purchased from the FEACo in November as a replacement.

The policy of the HKFC was that elementary training would be performed on landplanes, while all soloists had to fly a seaplane. The reason was that the small area available at Kai Tak for landing and taking off in a landplane was not suitable for students flying solo, due to the mountainous surroundings. VR-HAB was fitted with floats for advanced training work, but on 10 February 1931 it was so badly damaged by a student that it could not be repaired locally.

The aerodrome was now enlarged and all training was made on VR-HAE as a landplane. It was operated until October 1931, when the club's funding finally dried up. Pilot Instructor Howes had left in July to take up an appointment with the FEACo in North China and was replaced by W F Anderson in September. An accident finally put an end to the club's activities, when a matshed hangar belonging to the HKFC was completely destroyed by fire on 2 May 1932. The remains of VR-HAA and VR-HAB were destroyed, as was the fuselage of crashed DH 60 Moth G-AADW, belonging to John Ford, and various other aircraft parts. The HKFC suspended operations late in 1932 and Avian VR-HAE was probably stored. It was finally sold to the Far East Flying Training School in 1935.

The Far East Flying Training School and the Air Arm of the Hong Kong Volunteer Defence Corps

R Vaughan-Fowler proposed in 1932 that the Far East Aviation Company should form a subsidiary called the Far East Flying Training School, Ltd (FEFTS), and that this company would take over the Hong Kong Flying Club subsidies. The Hong Kong Government approved of this under the condition that the FEFTS promised to train members of the Hong Kong Volunteer Defence Corps (HKVDC).

The FEFTS was incorporated on 7 November 1932. A V Harvey was appointed Manager, W F Murray became Commandant and Lord Malcolm Douglas-Hamilton Chief Instructor. The school did not begin operations at Kai Tak until on 1 March 1934, however[5]. Initially it had three two-seat trainers: Avro 626 VR-HCO and two Avro 631 Cadets, VR-HCM and VR-HCN. Cadet VR-HCL had also been intended for the school, but it was sold elsewhere by the FEACo. Another Cadet, VR-HCS, was added to the school's fleet of aircraft in August. On 3 March 1934 flying instruction started for two officers and ten other ranks of the Air Arm of the HKVDC.

One Cadet crashed on 31 May 1934 when piloted by Chinese instructor Tse To, but it was later repaired. Murray

5 It seems that ground instruction started already in 1932 when students were sent from Kwangsi to Hong Kong for training.

Avro 631 Cadets VR-HCL and VR-HCN of the Far East Flying Training School.

Aircraft of the Far East Flying Training School

Reg	Type	C/n	Date	Remarks
VR-HCM	Avro 631 Cadet	684	19.2.34	Cx 12.11.42
VR-HCN	Avro 631 Cadet	685	19.2.34	Cx 25.5.42
VR-HCO	Avro 626	573	19.2.34	Cx 28.11.34
VR-HCS	Avro 631 Cadet	558	18.8.34	Ex G-ABRS. Crashed .36, cx 7.2.36
VR-HCT	Avro 671 (C.30A)	734	27.12.34	Cx 19.11.36
VR-HCU	DH 60GIII Moth Major	5133	26.4.35	Cx 30.4.38
VR-HCV	Miles M.3A Falcon Major	149	27.5.35	Cx 30.5.39 as sold. To VR-RAP .38
VR-HAE	Avro 616 Avian IVM	475	28.5.35	Ex-HKFC. Wfu, cx 30.5.39
VR-HCW	DH 87B Hornet Moth	8129	23.8.37	Cx 16.1.42
VR-HCX	DH 87A Hornet Moth	8002	17.12.37	Ex G-ADJU. Cx 30.9.39

and Douglas-Hamilton remained as instructors, but Vaughan-Fowler had resigned and another Chinese pilot, Hung Tai-ming, was engaged as Liaison Officer between the British staff and Chinese pupils. Thirty students from the Kwangsi Air Force under the leadership of Lieutenant Dai Sik-yam started a one-year course in August to study aircraft maintenance and engineering. On 25 November two members of the HKVDC crashed and were badly injured in Avro 626 VR-HCO and the aircraft had to be written off.

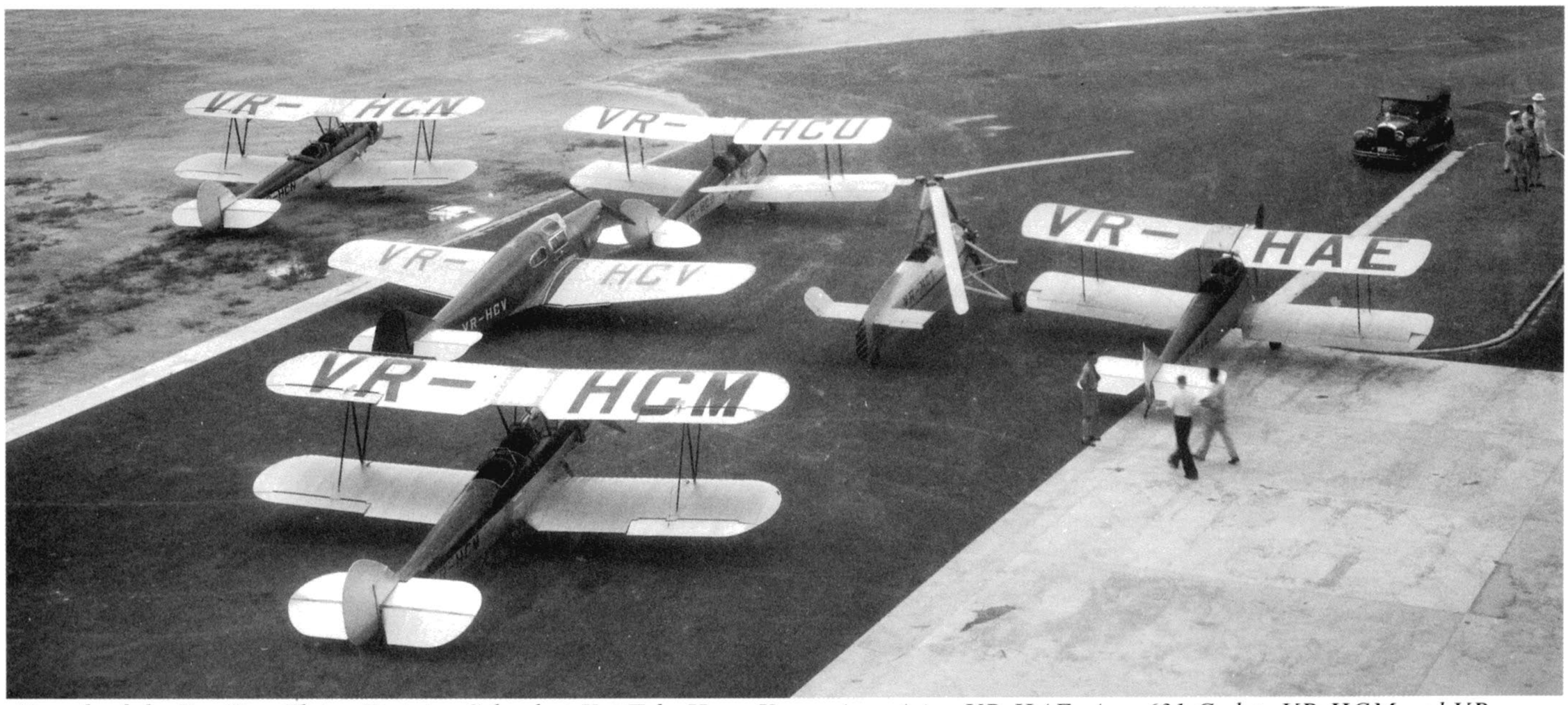
In December 1934 Cierva C.30A autogyro VR-HCT, actually a licence-built example known as the Avro 671, was added to the school's inventory. A new FEFTS hangar and new offices were ready by mid-1935 and three new aircraft were acquired in April-May that year: de Havilland DH ö60GIII Moth Major VR-HCU, Miles M.3A Falcon Major VR-HCV and Avro Avian VR-HAE (ex-HKFC). The Avian could be fitted with both wheels and floats.

By March 1936 there were six pupils from the Nanking Air Force, 30 engineering students from the Kwangsi Air Force and 15 private students at the FEFTS. In September there were 32 pupils training as pilots and 48 as ground engineers. Flight Lieutenant P Holroyd -Smith was in charge of flying training and V J Neyle was chief ground instructor. It was reported that one (new?) aircraft was "nearing completion" at Kai Tak and that it was "built by engineering students and constructed from parts made here and imported from England"[6].

On 7 June 1937 two Chinese pupils failed to return to Kai Tak after a training flight when Moth Major VR-HCU and Cadet VR-HCN went missing. A few days later it was found that one of the aircraft had landed in Canton. The other was discovered on the Kwangsi-Kwangtung border and was partly submerged near a river. Both were brought back to Hong Kong and repaired.

The FEATS purchased a de Havilland DH 87B Hornet Moth, VR-HCW, which arrived in Hong Kong on 18 August 1937 aboard SS "Radnorshire". This type was the first with side-by-side seating, which was considered practical for school work. A second aircraft of the same type, VR-HCX arrived in December. By the end of 1937, 316 students had been trained since the FEFTS started giving flying

6 This was probably one of two aircraft "used solely for ground instruction" by the FEFTS in 1937. It seems likely that these were the two Avro trainers that had crashed and had been written off earlier.



Aircraft of the Far East Flying Training School at Kai Tak, Hong Kong: Avro Avian VR-HAE, Avro 631 Cadets VR-HCM and VR-HCN, de Havilland DH 60G III Moth Major VR-HCU, Miles Falcon Major VR-HCV and Avro 671/Cierva C 30A autogyro VR-HCT.

training in March 1934. Of these 159 had been trained to pilots.

It seems that ten Flight Cadets of the Air Arm of the HKVDC were training at the FEFTS at all times. The first Air Arm Camp was held in 1935 and on this occasion aerial reconnaissance was practised. In 1936 the Air Arm had been expanded into three flights, but it had no aircraft of its own. There were plans for a Volunteer Air Force Unit with an initial equipment of four Hawker Audax, one Hawker Hart Trainer and one Avro Tutor but, although these plans were still valid in 1938, they were never realized. In that year six officers of the RAF Reserve were trained besides those of the Air Arm and a total of 160 hours were flown for Army co-operation.

Since 1929 the Royal Air Force had a presence in Hong Kong, initially with aircraft from the carriers "Eagle" and "Hermes" patrolling the Chinese coast as the China Squadron. The RAF had a landbase at Kai Tak, but the few aircraft stationed there could never seriously defend the city.

The Air Arm increased its usage of the FEFTS aircraft in 1939, when all of the school's machines were employed for flying instruction, army co-operation, and Volunteer Air Arm and RAF Reserve training. The Avian and one Hornet Moth crashed in 1939, however.

In 1941 the Air Arm started to assist the RAF with anti-submarine patrols, target flying and other duties, using the FEFTS aircraft. It did not participate in any aerial fighting during the Japanese attack on 8 December 1941, however. Most of the aircraft and equipment were lost in the Japanese air raids and after the surrender on 25 December the Japanese seized all remaining FEFTS assets.

Minor Companies and Private Flying

Great China Air-Ways Company

The Great China Air-Ways Company was apparently set up by Curtiss agent James Selvin as a front for the sale of aircraft for military purposes. Selvin, who was going to be the General Manager, outlined the idea of the Great China Air-ways Company in August 1922. An aerodrome was to be arranged at Lungkehsien, 5 miles from Amoy, and this locality had been "inspected and approved by the Board of Founders". The company was first called the Fukien Airways Mail & Light Express Company and there were plans for air services over Fuchow toYenping, and to Yangkow, at least on paper.

An American named H M Gallop, who was to "supervise operations and training", wrote on 7 August that "there seems to be some doubt or misunderstanding regarding the activities of the Great China Air-ways Company" and that there were "no military motives whatsoever". Lim Kingjin, one of the founders, was from Formosa and was a Japanese citizen. The company was to be registered in his brother's name, Lim Kong Ghee. Two American pilots and three mechanics were to "act as instructors", but nothing of this ever happened.

The first time the name of this company was used was when Li Hou-chi at Fuchow, the military governor of Fukien, purchased six Curtiss JN-4D2 Jennys, two sets of spare parts and a camera from James Selvin (Curtiss Aeroplane and Motor Corporation) in May 1922. The aircraft were bought in the name of the Yen-Fu-Ch'uan (Fuchow) Motor Car Company. They arrived in Fuchow in August 1922, were conveyed to Shanghai, but were detained by customs. They were finally moved to Hankow by Selvin and sold to Paoting. In 1923 James Selvin signed a contract in Peking for 24 Curtiss aircraft to be delivered to the Great China Airways Company and this time the company was acting as a front for Ts'ao K'un's Paoting Air Corps.

Arnhold & Company, Ltd

In the spring of 1928 Arnhold & Co, Ltd, decided to start selling aircraft and hired Captain W E F Jones to head the operation. The Arnhold Aviation Department was born on 1 April 1928. A two-seat de Havilland DH 60 Moth was purchased for demonstrations in Shanghai and arrived early in 1929 and Captain F A Swoffer was engaged as Chief Pilot. Arnhold & Co became representatives of de Havilland and Handley Page, later also Blackburn and Fairey.

The Moth was placed on show in Shanghai and was then demonstrated in the air over the city by Jones. Before leaving the company in 1934 he had sold altogether 150 aircraft, mostly Moths, Puss Moths and Tiger Moths, to Nanking, Mukden, Kaifeng, Chungking, Canton, Shanghai, Taiyüan, Hankow and Changsha. After leaving Arnhold & Co, Jones became adviser to the Chinese Government.

Amoy Commercial Aviation School

Lieutenant Colonel John F S Lee (Li Hang-suam) arrived in Manila on his way home from the USA in July 1928. A number of Fukien merchants in the Philippines had organised an association for aerial navigation and Lee was trying to secure financial assistance for a Fukien Commercial Aviation School at Amoy. The secretary of the association

went to Shanghai in July and signed a contract for "two commercial aircraft, five experimental aircraft and three hydroplanes". According to Lee two training aircraft had been ordered. In September 1928 a committee headed by Go Jocco was set up in Manila.

The Amoy Commercial Aviation School, also referred to as the Fukien People's Aviation School (Fu chien min yung hang k'ung hsüeh hsiao), was established on 10 October 1928 with the intention to provide both theoretical and practical instruction for Chinese and Philippine-Chinese in one-year classes. Colonel Lee arrived with a Philippine pilot and two aircraft in October, but the undertaking was already plagued by financial difficulties and the aerodrome was far from ready by that date. The headquarters were at Go Tong, a village about 10 miles outside Amoy, in the north-east extremity of Amoy Island. A temporary matshed hangar for one aircraft has been erected and a short runway had been marked out. At the end of September the school had applied for a local permit to import two German aircraft through Hong Kong.

By mid-November no flights had yet been made, as the necessary permit had not arrived from Nanking. The school was aided unofficially by the local naval authorities, however, and between 40 and 50 pupils had enrolled and had already started their theoretical education. Five aircraft had been received: one Raab-Katzenstein RK 2a Pelikan two-seat biplane, two Klemm L 25 Ia two-seat monoplanes and a pair of Alexander Eagle Rock A-2 two-seat biplanes. Only the Pelikan was unpacked and assembled. The Eagle Rocks had been shipped to China about September 1928 by the Pacific Commercial Company, San Francisco, and had arrived in damaged condition.

Colonel Tang Kok-liang was Superintendent and Lieutenant Colonel Li Hang-suam, originally trained in the USA, was flying instructor together with Vincente Barretto, a Philippine citizen. Domingo Siy, also a Philippine citizen, was non-flying instructor.

By June 1929 the aircraft inventory of the school had increased slightly. In addition to the two Klemm L 25 Ias, of which one was fitted with floats, and the RK 2a Pelikan, which had been written off due to a landing accident, there was a two-seat Raab-Katzenstein RK 9 Grassmücke[7]. It had been intended to put the Grasmücke on floats, but this had not been successful. Three aircraft were still in their crates lying in the open: a Raab-Katzenstein Kl I Schwalbe and the two Alexander Eagle Rocks. A German named Dr Kammen was now Director of the school, but he was to leave in September-October the same year.

At the request of General Chang Chen, the Commander of the 49th Division, the school dispatched a machine to Changchow in July 1929, where there was a temporary aerodrome and a hangar for two aircraft. Kammen and Lee made two flights over Lung Yen to drop some anti-Communist pamphlets.

The school had quickly run into economical problems. Of the originally 38 or 40 students only 18 completed their training. The Nanking Government sent inspectors, who reported about poor management and suggested a take-over. The Nanking Aviation Bureau recommended in July 1929 that the school be removed to Nanking, but the founders took exception to this ruling and in September it was rumoured that it was to be amalgamated with the Amoy Naval Flying Establishment.

The Fukien People's Aviation School had to close early in 1930 owing to a lack of funds and in August it finally went into bankruptcy. It was taken over by the Canton Air Force and on 10 September 1930 it moved with staff, 13 students, five aircraft and all equipment to Canton. On 17 January 1931 the final 12 cadets graduated with the 4th class of the Canton Aviation School.

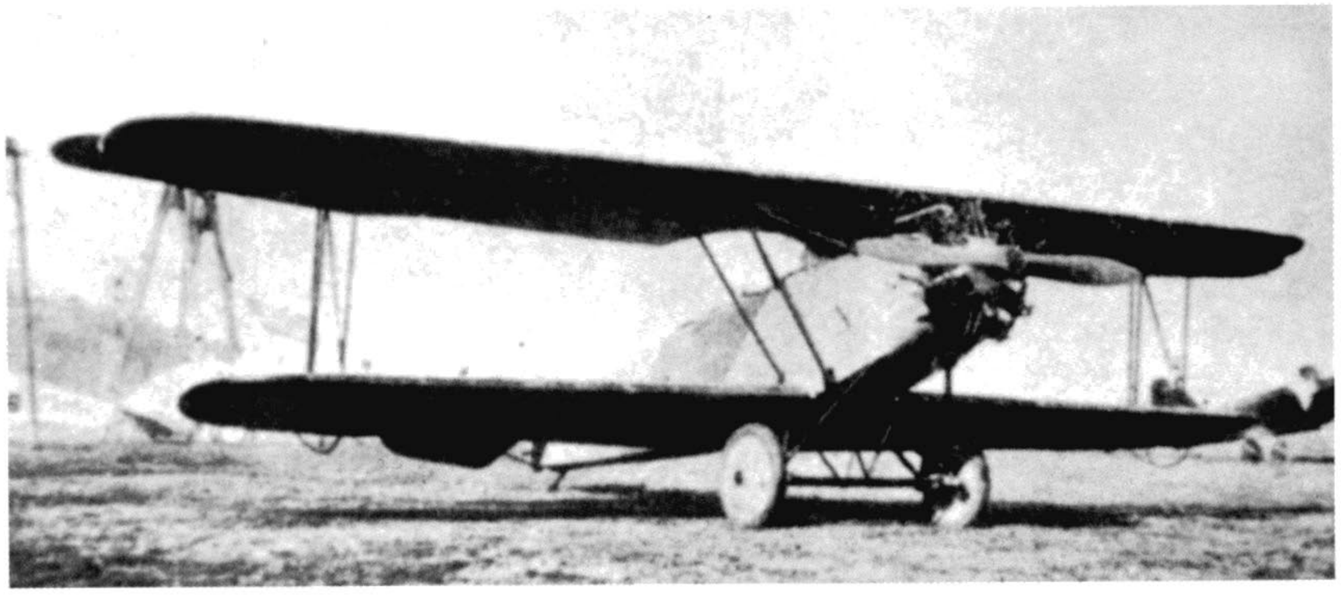
Wuhan Commercial Aviation Company

Chang Huei-chang's visit in November 1928 with the Ryan Brougham named "Canton" triggered great interest in aviation at Hankow. Soon a number of local merchants headed by Chow Sin-tong organised the Wuhan Aeronautical Association and proposed the formation of a civil air transport company. Chang Wei, Chief of the Hankow Aviation Bureau, was appointed head of the Wuhan Commercial Aviation Company, Ltd (Wu-han min-yung hang-k'ung ku-fen yu-hsien kung-ssu), which was then registered on 20 November 1928. General Li Tsung-jen was appointed Chairman and the Executive Committee consisted of Chang Wei and five other people.

Five Ryan B-1 Brougham cabin monoplanes were immediately ordered from L E Gale & Co. Siemsen & Co had offered to supply five Junkers F 13s or W 33s, but Chang Huei-chang's Ryan had apparently made an impression. There had been some interest in the Junkers types at first, but the price for the F 13 was considered too high. In addition four de Havilland DH 60 Gipsy Moths were purchased from Arnhold & Co for use in the training role.

The orders were placed in November 1928 and at the end of January 1929 the Ryans arrived in Hankow and were erected and tested by Earl F Baskey, who was sent out by the makers, the

7 Early in March 1929 the school was awaiting permit to land a new heavier training aircraft, probably the Grassmücke.



A Raab-Katzenstein RK 2a Pelikan was among the aircraft types used by the Amoy Commercial Aviation School (Fukien People's Aviation School).

The Wuhan Commercial Aviation Company purchased five Ryan B-1 Broughams and this one was named "Hankow".

Mahoney Aircraft Company. The aircraft were named "Hankow", "Siangyang", "Changsha", "Ichang" and "Yangtzekiang" and test flights and a demonstration of the new aircraft took place on 21 February. One or two trial trips to Siangyang were made, but besides this the aircraft were only used for local sightseeing flights.

When the Kwangsi-Nanking trouble occurred in April 1929, all the civil aircraft at Hankow were commandeered and incorporated into the Nanking Air Force. The Moths arrived in May and were paid for by the Nanking Government. They were delivered directly to the 1st Squadron of the Nanking Air Force at Hankow.

Hui-t'ung and China Aviation Companies

On 24 November 1935 General Yin Ju-keng, who was backed by the Japanese Kwantung Army, declared an independent East Hopei Government and on 12 December the Hopei-Chahar Political Council under General Sung Che-yuan was set up in Peking. Sung met with Japanese representatives to sign an agreement on 17 October 1936 providing for through air traffic between Japanese-occupied North China and Manchukuo. On 23 October the Hui-t'ung Aviation Company (Hui-t'ung hang-k'ung kung-ssu) was formed at Tientsin, where the Japanese Army headquarters was situated and General Chang Yüh-yung was appointed Director. The company was registered on 14 November. Fifty per cent of the stock was held by the Hopei-Chahar Political Council and the other half by the Japanese through the South Manchurian Railway Company.

Hui-t'ung was inaugurated on 17 November 1936 at the newly constructed Tientsin airport. The airline's aircraft fleet was displayed on the aerodrome: a single Fokker F VII-3m intended for the Tientsin-Darien route, six Nakajima-built Fokker Super Universals for the Peking-Tientsin-Shanhaikuan-Chingho and Tientsin-Peking-Kalgan-Changpei routes, and a pair of de Havilland DH 80 Puss Moths for the Tientsin-Peking-Chengteh (Jehol) route. All had the company symbol painted on, a red/blue yin and yang roundel divided vertically, with a small red/blue circle in the opposite colour inserted in each field. The aircraft were numbered 127, 128, 140, 502, 504 and 1101-1104[8]. Later reports mention a fleet of two Fokker F.VII-3ms, five Fokker Universals and two Puss Moths. All pilots were Japanese.

Two twin-engined Nakajima AT-2 passenger transports were ordered for the company and the first one, named "Peiping Hao", was delivered in February 1937. It was at first used for sightseeing tours. The second aircraft, "Tientsin Hao", arrived in March. In addition Hui-t'ung planned to buy another pair of machines of this type and five 6-passenger aircraft.

8 These numbers were probably related to the numbers used for MKKK aircraft in Manchukuo, M-502 and M-504 were probably F. VII-3ms, while M-127, M-128 and M-140 would be Super Universals.

A Mitsubishi MC-20 of the China Airways Company.

n 1 June live goldfish and goodwill messages were sent from Tientsin to Tokyo with an AT-2 in connection with the inauguration of a direct service between the two cities. Stops were made at Darien, Seoul and Fukuoka. The live fish was intended for presentation to leading government and aviation officials in Japan. The Central Government at Nanking immediately ordered the suspension of the new service. The Chinese and Japanese directors of Hui-t'ung, representatives of the Japanese military headquarters and the Aviation Director of the Tokyo War Office met and decided, not unexpectedly, to ignore the protests...

When the war with Japan started in July 1937 the Hopei-Chahar Political Council and General Sung Che-yuan decided to join Chiang Kai-shek, which meant that Hui-t'ung had to be reorganised by the Japanese. The company was liquidated and the China Aviation Company (Chung-hua hang-k'ung kung-ssu), sometimes called the China Air Transport Company, was formed in Peking on 10 December 1938 to take over the assets. Tsuneo Kudama, ex-Vice President of Hui-t'ung, was appointed Managing Director. The new company was owned by the Japanese Dai Nippon Aviation Company and the Japanese-supported Peking, Nanking and Inner Mongolia governments.

China Aviation's first service, Peking-Hsinking, was inaugurated on 10 February 1939 and Peking-Shanghai and Peking-Tatung services were opened with a pair of Lockheed L-14 Super Electras and three six-seat aircraft on 14 and 15 March. Other routes were added in 1940: Shanghai-Canton on 1 April, Shanghai-Darien (via Tsingtao) on 13 April, Shanghai-Hangchow on 1 June, Peiping-Kaifeng on 19 June, Tsingtao-Taiyüan on 1 September, and Tsingtao-Kaifeng on 22 October. On 1 June the frequency of the company's service Peiping-Kalgan was increased. By the end of 1940 it was reported to be operating leased DC-2s, DC-3s, Lockheed L-14 Super Electras, Type 97s, Puss Moths, Nakajima ATs, Super Universals, Beech C17Es and "Ambulance planes", all supplied from Japan.

A new China Airways Company (Chung-hua hang-k'ung kung-ssu) was formed in Shanghai in December 1943. It was supported by the Japanese-supported government set up there, which from 30 March 1940 was under Wang Ching-wei. Mitsubishi MC-20s was used by this company, which operated the Peking-Darien, Peking-Shanghai and Peking-Tatung routes. China Airways survived until 1945 and a number of its aircraft passed on to CATC after the war.

Hamiata (Chinese-Soviet Aviation Company)

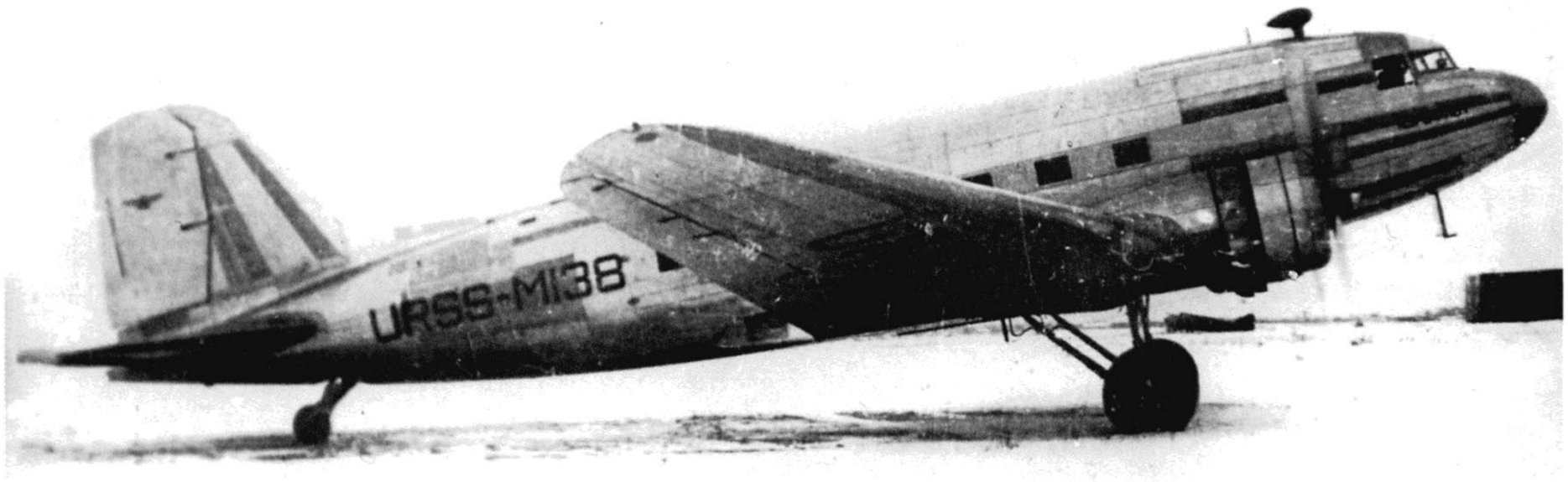
After the signing of the Chinese-Soviet non-aggression pact of 21 August 1937 a non-scheduled air service between Alma-Ata and Lanchow in China was opened by Soviet airline Aeroflot with Tupolev PS-9, Polikarpov P-5, Tupolev G-2 and Douglas DC-3 aircraft. This service was not a normal commercial undertaking, however, but more of a transport service for the Soviet military forces in China.

On 12 April 1938 Chinese and Soviet representatives met in Hankow for the first discussions about a Hankow-Hami-Alma Ata-Moscow airline. The section between Hami in Sinkiang Province and Alma-Ata was to be operated in co-operation and the negotiations about the details of this agreement continued into 1939. The Chinese planned to use a pair of Eurasia Ju 52/3ms with Chinese crews and the Soviet side intended to assign two of the Douglas DC-3s recently ordered from the USA to this project. A first proving flight between Hami and Alma-Ata was made on 24 March 1939 by a Junkers Ju 52/3m with an all-Chinese crew. The aircraft had been chartered from Eurasia, whose service to Hami had been re-opened on 20 February the same year.

An agreement was signed on 9 September 1939 between the Chinese Ministry of Communications and the Soviet Civil Air Fleet's Main Administration (GU GVF). On 15 November 1939 the Chung-Su hang-k'ung kung-ssu (Chinese-Soviet Aviation Company), or Sovetsko-kitaiskaya aviatsionnaya kompaniya "Hamiata", was founded as a 50% Chinese, 50% Soviet company[9]. Each party was to appoint three directors on the board. Chang Yüan-fu, Liu T'ang-ling, Golubov and Yurkov were appointed at first, the last-mentioned with the title Director. All aircraft belonging to the company were to be marked with the words "Hami-Ata" and the Chinese characters for "Ha-A". The Russians set up the facilities along the route, radio stations, etc.

The first scheduled flight from Alma-Ata over Ili and Tihua (Urumchi) to Hami took place on 5-6 December, when General Ho Yao-tsu, secretary general of the National Military Council left for Moscow, and on 8 January 1940 the service was formally opened. The two Soviet-registered Douglas DC-3s assigned to Hamiata soon reverted to non-

9 The company was first called "Sovchina" in a Russian proposal dated 20 August 1938.



Hamiata operated Soviet-registered Douglas DC-3s.

Hamiata Fleet List

Reg	Type	C/n	Reg Date	Notes
URSS-M136	Douglas DC-3	2031	13.8.1938	Used from 1939. To URSS-M. Still in service by 4.42
URSS-M137	Douglas DC-3	2043	13.8.1938	Used from 1939. To URSS-N. Crashed 6.6.43
URSS-P	Douglas C-47	6004	6.8.1943	Ex 41-18643
URSS-R	Douglas C-47	4765	26.8.1943	Ex 41-18604

scheduled operation, however, Soviet advisers, diplomats and officers being the only passengers. Four Russian pilots and and a similar number of co-pilots were assigned to Hamiata.

Scheduled service was opened again in May 1941, but only for the summer period. The aircraft used, Aeroflot's Douglas DC-3s URSS-M136 and URSS-M137, later re-registered URSS-M and URSS-N, were never marked with the Chinese characters "Ha-A" (for Hamiata), and retained their "Aeroflot" titles. The comany had radio stations at Hami, Urumchi, Wusu, Tsingho and Ili. Fuel came from the USSR and was shipped by the Ili River to Ining, from where the company's own trucks took over.

From the outset political considerations on both sides had dominated the creation and development of Hamiata and there was little commercial interest involved. The head office was at Tihwa (Urumchi) in China and this was the only concession to the Chinese side that the Russians made. The company's Soviet personnel had never started to train Chinese personnel as intended, the mutual management organs were ignored and all communication was in Russian. The Russian directors stayed in Moscow and there had not been any board meetings for over two years. The General Manager was Russian, the books were kept in Russian and in reality Hamiata was an all-Soviet undertaking and not a joint company as stipulated in the agreement.

The Chinese Government finally took a decision on 19 April 1943 not to renew the entry permits for Hamiata or any other Soviet aircraft. Eurasia had not been able to run the service to Hami as planned and for this reason the Hamiata DC-3s had made at least 79 flights between Hami and Chungking during the period July 1939 to April 1943.

As part of the Chinese Government's attempts to strengthen its influence in Sinkiang it ordered CATC (formerly Eurasia) to fly all the way to the Soviet border. They opened a service to Tihwa, but in order not to violate the Soviet agreement, the aircraft did not land at Hami. These flights had to be interrupted on 7 April 1944, however, and CNAC took over the service to Hami on 23 February 1945.

Soviet aircraft were soon allowed to fly into China again. DC-3 URSS-N was lost on 6 June 1943 (9 June according to American reports), when it crashed in the desert between Tihwa and Hami. All of the passengers and crew were killed. In August the same year Hamiata received a pair of Lend-Lease Douglas C-47s, which were registered URSS-P and URSS-R. According to Russian statistics a total of 2,370 passengers, 1,088 tons of freight and 87 tons of mail were transported by Hamiata between 1939 and 1946.

Aeronautical Associations and Flying Clubs

The Aero-Club of Shanghai was formed on 8 January 1921 and the first general meeting of the Shanghai Aeronautical Society was held on 17 March the same year. An Avro 504K that had been imported from England by the Central Garage Company in 1920, and had been detained in customs was offered to the Aeronautical Society but was not purchased. It seems that it never acquired any aircraft of its own.

A national aviation conference was held on 1 August 1928 under the auspices of General Chang Ching-yü, then Director of the Nanking Air Force. A Chinese National Aeronautical Association, or Aviation League (Chung-kou hang-k'ung hsieh-hui), was organised as a result, with head offices at 438 Rue Lafayette, Shanghai, and branch offices in Nanking, Canton and Changchow. General Li Chi-sen was appointed Chairman of the Committee and President of the Association, but after a controversy in 1929 this association was closed. There was also a Honan Aviation Promotion League (or Northwest Aeronautical Association) and a Wuhan Civil Aviation League (in 1927 only).

Early in 1932 two Americans and a number of prominent Chinese civilians completed preparations for the formation of a private flying club in Nanking. They were first supported by the Director of the Bureau of Aeronautics but political changes in the Bureau later forced them to abandon their plans. It had been intended to purchase the Junkers A 50 that had been imported for demonstration purposes, which was available cheaply.

The National Aviation Association was reformed on 1 January 1933 to collect money for the promotion of civil and military aviation. The first aircraft presented to the CAF by the assiciation were three Armstrong Witworth AW 16 fighters purchased for money collected in Honan.

Early in 1934 Chiang Kai-shek authorised the formation of a new Shanghai Flying Club. It was to be stationed at Hungjao aerodrome, and instructors from the Hangchow Aviation School were to be employed. On 18 March 1934 the China Aero Club was founded and on the same day a Junkers A 50 two-seater and a Potez 36 were presented to the club. They were given by a seasoning factory and by Tu Yüeh-shen and were christened "T'ien Ch'u No.2" and "Yüeh Wen", respectively. Also this project failed, however, as it never obtained necessary sanctions from the Government.

On 10 October 1935 a China Flying Club was organised by the China Aviation Association. It was stationed at Lunghua, Shanghai, and was said to have three aircraft. These probably included a Kinner Sportster, which carried

A Comper CLA 7 Swift was acquired by Wu Yu-chuan of Peking, who hired Nieh Heng-yu as his flying instructor.

the inscription "Chung-kou hang-k'ung hsieh-hui" (China Aviation Association) on the fuselage and was named "Chiu Kuo Hau Yi" (National Salvation No.1). Two Fleet 10s had been ordered from the Shanghai Naval Aircraft Factory, which was assembling that type from Canadian-made components, but for some reason only one was delivered.

In May 1936 a new building of the China National Aviation Association's headquarters was officially opened in Shanghai. The house was built in the shape of an aircraft! Free aircraft rides were offered for two months to celebrate the occasion and on 18 June there was a ceremony at Lunghua. In the same month the so-called Central Flying School was established. It was inaugurated at Lunghua on 19 June and 36 students, including two women, started a six-month course. Fleet trainers were used. The graduation exercises of the first class were held on 21 December 1936 and 30 pupils successfully completed the course.

The China Aviation League was absorbed by the China National Aviation Reconstruction Federation in 1936. The head office of the new organisation was in Nanking and its purpose was to distribute propaganda for the encouragement of aviation and to raise funds for the procurement of aircraft for the Air Force.

Privately Owned Aircraft

There were extremely few privately owned aircraft in China. The reason was that in principle private flying was not allowed.

Major W McBain, Shanghai, imported a two-seat Armstrong Witworth FK.8 biplane and made some flights with it in 1920. He crashed on 11 November 1921, however, and sent the damaged machine to Lunghua late in 1922 to have it rebuilt in the workshops there. At that time it had possibly been acquired by General Lu Yung-hsiang, the warlord of Chekiang, but it is not known if it ever flew again.

In July 1920 it was reported that the Central Garage Company, Shanghai, was building an airport and that an Avro 504K had been ordered from England. According to the invoice, which was dated 30 July 1920, A V Roe sold the aircraft to Probst, Hanbury & Company, London. It was described as a three-seat Avro 504K with an 80 hp Renault and with this engine type the correct designation was Avro 548. The aircraft was detained in customs and was apparently bought by General Lu in 1922.

In October 1921 a Caudron G 3 trainer was imported by Captain Roques, French aeronautical attaché to Peking, and Masse, French flying instructor at Peking 1921-22. It was used as their private aircraft until presented to the Peking Government on 26 August 1922.

A Bird CK (c/n 4034) was imported by a private person in Shanghai late in 1931. Little is known about this aircraft, but it was probably acquired by Chang Hsueh-liang and used by him in Peking.

A former Spanish-registered Comper CLA 7 Swift light-plane was exhibited in Shanghai by the FEACo in May 1933 and was then sold to Wu Yu-chuan of Peking, who hired Nieh Heng-yu as his flying instructor. Another (or the same?) Swift was owned by a General Yung and was named "Liao He". It crashed at Nan Hu, Hangchow.

(See also under Aviation in Hong Kong and Macao).

China National Aviation Corporation

On 15 April 1929 the Nanking Government decreed the establishment of the China National Aviation Corporation (Chung-kuo hang-k'ung kung-ssu), or CNAC. On 17 April CNAC signed two contracts with the Aviation Exploration Inc (Curtiss-Wright), which transferred the rights to operate a flying school, a factory, air transport and airmail to the American company. The Minister of Railways signed another contract with Aviation Exploration on 20 April, providing for the establishment of regular airmail in China, initially between Shanghai and Hankow, Nanking and Peking, and between Hankow and Canton. The American company was also granted a permission to operate flying schools and an aircraft factory. CNAC was set up on 18 July 1929 with offices at 3, Canton Road, Shanghai.

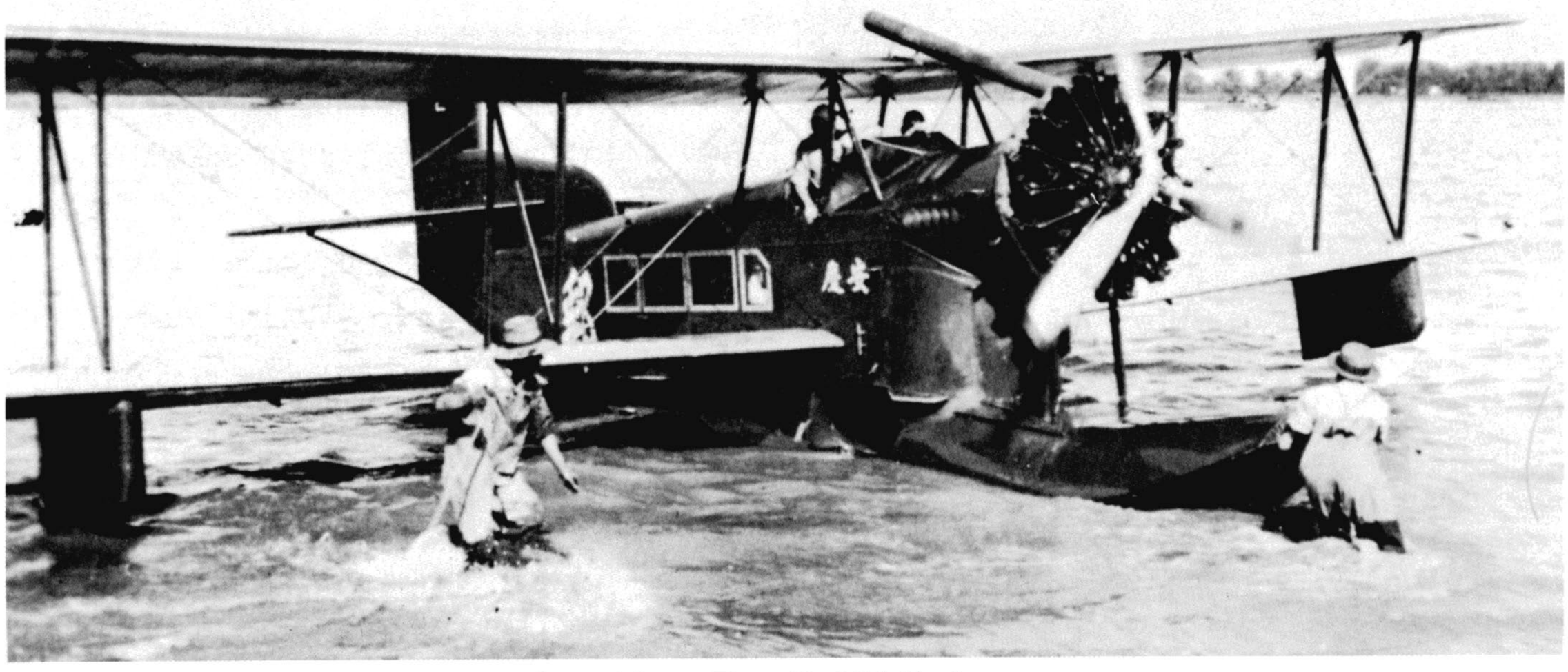
The Aviation Exploration, Inc, had been formed in 1928 by Clement M Keys of the Curtiss-Wright Corporation for operations in China. It was headed by Major William B Robertson. R O Hayward had travelled to China in December 1928 for negotiations with Sun Fo, Minister of Railways, who became President of CNAC, an appointment which was approved by the Government on 21 May.

A first expedition, consisting of Robertson, Roland Riggs, James M Wilson and pilots Eyer L Sloniger and Arthur L Caperton, was sent out by Aviation Exploration for demonstration and survey purposes. They brought two Curtiss Robin three-seat cabin monoplanes (one Robin B and one Robin C), an Ireland N-2 Amphibian and a Curtiss Falcon two-seat observation biplane. The expedition left the USA with the SS "President Johnson" on 26 January and arrived in Shanghai in the middle of March 1929.

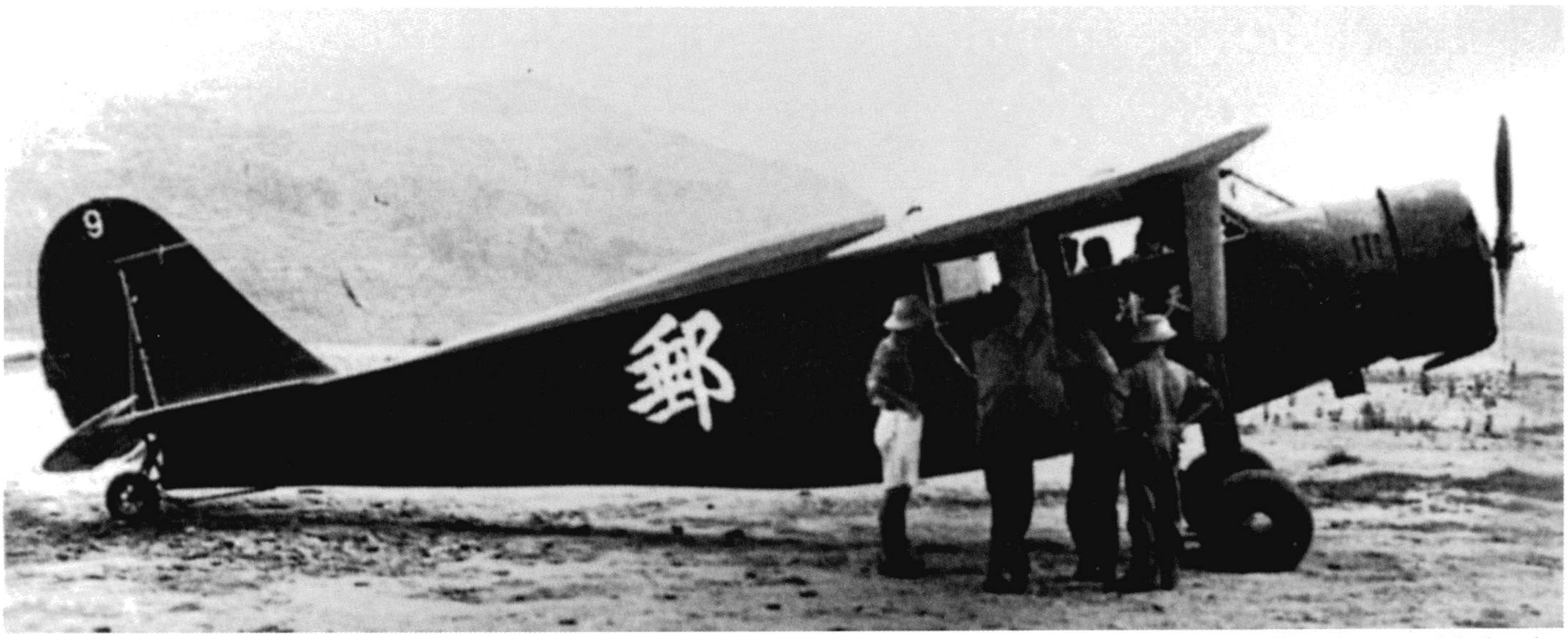
One of the Robins was demonstrated at Hungjao, Shanghai, on 27 March, when sightseeing flights were made and on 1 April a Robin was flown to Nanking. In the following week a number of flights were made to Nanking by American and Chinese pilots due to a war emergency. Chiang-Kai Shek had requested all four aircraft on 30 March and they were quickly sold to the Nanking Government. Two were delivered immediately and the remaining two were assembled and flown to Nanking a few days later[11]. Caperton and Sloniger left China on 17 May.

China Airways, Federal Inc, was founded in the USA on 1 August and was incorporated on 26 August to run the CNAC service in China. Both this company and Aviation Exploration were subsidiaries of Inter-Continent Aviation, which was in its turn part of the Curtiss-Wright Corporation. Ernest B Price, former US Consul in Nanking, was appointed President of China Airways[12]. Three American pilots, Ernest M Allison (CNAC Chief Pilot), S T Kaufman and Birger Johnsen, were sent out from Seattle on 27 July. Harry G Smith was engaged as Operations Manager and

11 The Ireland Amphibian was reported to have crashed in Shanghai in 1929.
12 Price remained at this post until April 1930.



CNAC:s first aircraft were six Loening Air Yacht amphibians. This is No 2 "Anking".



In 1930 six Stinson SM-1F Detroiters were transferred to CNAC from the Nanking Government. No 9 "Tientsin" has been modified and fitted with an engine cowling.

remained on this post until 1931, when he was replaced by William Langhorne Bond, who arrived in Shanghai on 17 March 1931. E L Fries, Vice-President of Aviation Exploration, arrived in Shanghai in August.

Five Loening C-2-H Air Yacht eight-place biplane amphibians were ordered for CNAC and the first one was loaded aboard the "President Grant" at Seattle on 7 September. The reason for choosing amphibians was the nature of the company's first route between Shanghai and Hankow, a typical river route running along the Yangtzekiang. CNAC's first station was set up at Lunghua, Shanghai. The aerodrome was situated on the left bank of Whangpoo River, east of Lunghua, 4 miles from Shanghai on the Shanghai-Hangchow railway. The military did not at that time permit use of the airfield, however, only of the hydrodrome by the river. Two mat-shed hangars were erected on the riverfront and radio and meteorological services were set up.

List of Early CNAC Pilots

Allison, Ernest M (Chief Pilot)
Baer, Paul F
Bond, William L
Ehmer, William
Gast, Robert H
Havelick, Frank J
Johnsen, Birger
Just, Eric
Kaufman, Stephen T
McCleskey, James R
Mitchell, Hewitt F
Nelson, Floyd C
Rummel, George
Sharp, Charles F
Sloniger, Eyer L
Smith, Harry G
Vaughan, Charles S
Woods, Hugh L

The five Loening amphibians arrived in September-October and were unloaded at Shanghai docks. The first three were assembled and tested on 12-13 October and a proving flight was made to Hankow and back. Scheduled flights between Shanghai and Hankow via Nanking, Anking and Kiukiang started on 21 October when Birger Johnsen flew the first tour. A sixth Loening was purchased and shipped on board the "President Jefferson" on 2 November 1929. The Loenings were assigned CNAC fleet numbers 1 to 6 and were named "Shasi", "Anking", "Hankow", "Kiukiang", "Wuchang" and "Chungking".

On 7 December 1929 Sun Fo resigned as President of CNAC and Wang Po-ch'ün, Minister of Communications, took his place. This meant problems for CNAC, as Wang was the official responsible for the airline run by Stinson in competition with CNAC! Another problem was that China Airways had received no payment from the Ministry of Communications for the mail it had flown. CNAC finally had to threaten to stop operations on 16 December, before payment was received and as this was made public it caused a great "loss of face" for the Ministry of Communications.

A Second Try

Chinese opposition against the CNAC agreement was growing and the Americans had serious complaints as well. No efforts had been made by the Chinese side to construct the airport called for in the contract. General Chang Ching-yu, President of the Chinese National Aviation Association, made strong protests, supported by the Minister of War, who denied CNAC the use of airfields. China Airways sent out Max A Pollin to negotiate a new agreement and a modified contract was finally signed on 8 July 1930[13] and was ratified by the Nanking Government on 17 July.

The new CNAC, which was founded on 1 August 1930, did not only take over the assets of the old CNAC, but also those of the Shanghai-Chengtu Aviation Joint

Governmental Bureau, which had been run since 1929 by Stinson for the Ministry of Communications. The new Board of Directors consisted of Wang Po-ch'ün, Chairman (Minister of Communications), and Minard Hamilton, Vice Chairman and Director of Operations (ex China Airways). By October it included Max Pollin, Liu Shu-fan and Wei I-fu, and Harry Smith was Chief Pilot.

The integration of the Ministry of Communications personnel into CNAC did not go smoothly. Headed by General K I Nieh (Nieh Kai-yi)[14], former Director of the Shanghai-Chengtu airline, seven Chinese pilots resigned in October 1930. "We are pilots, not mechanics", they complained when interviewed by the newspapers. They had previously operated the Stinsons from Hungjao, but although being fully trained pilots they were not allowed by CNAC to work even as co-pilots. Instead a number of new American pilots were engaged, including Paul F Baer, Frank Havelick, J R McCleskey, Charles L Sharp, C S Vaughan and Hugh L Woods.

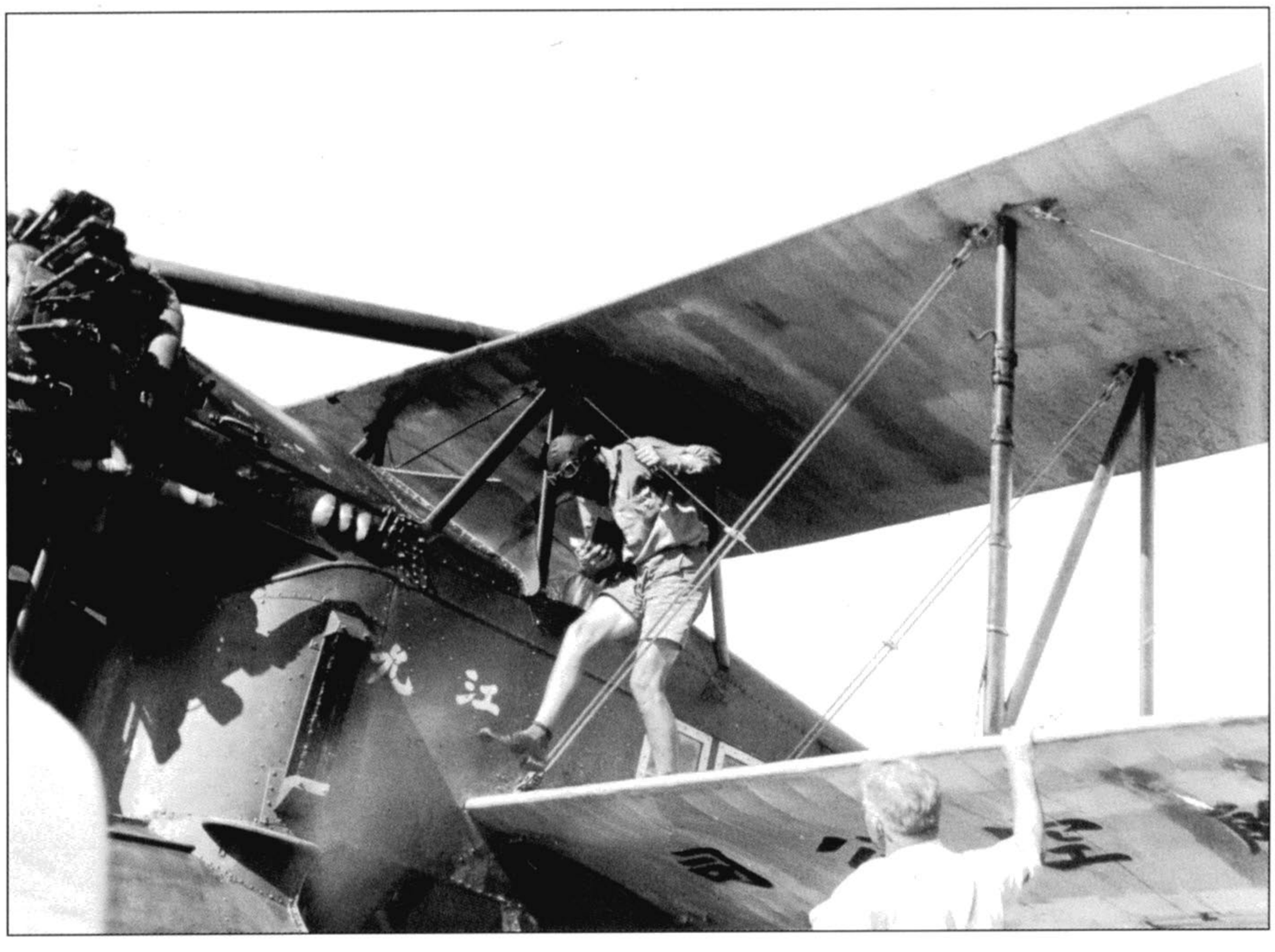
According to the new contract, the Ministry of Communications transferred its six Stinson SM-1F Detroiter cabin monoplanes to CNAC. In the meantime Curtiss-Robertson had built ten Curtiss Trush six-seat passenger transport monoplanes that were earmarked for delivery to CNAC. They were to be shipped in January 1930 and another five were to follow later. Due to the problems encountered in China, there was a change of plan and apparently only one of these machines was sent while the rest were never delivered. They were instead registered in the USA and what became of the Trush in China is not known.

Starting on 12 September 1930 Loening No 4 "Kiukiang" made a proving flight up the river from Hankow to Ichang and Chungking. By December only three Loenings were serviceable while three needed repairs. One had

Top:
Stinson Detroiter No 12 "Pengpu".

Centre:
The hull of a damaged Loening Air Yacht, No 2 "Anking" or No 6 "Chungking".

Bottom:
Loening Air Yacht No 4 "Kiukiang".



13 Between the Ministry of Communications, Republic of China, and China Airways. The following routes were mentioned in the contract: Shanghai-Chengtu, Nanking-Peking and Shanghai-Canton.
14 Nieh graduated from Varney School of Flying, Los Angeles, in 1913.

crashed on 9 December, when Paul Baer collided with the mast of a junk just after take-off at Lunghua. A wing was torn off, the aircraft crashed into the river and the two-man crew and three of the passengers were killed. Another Loening crashed in February 1931.

The CNAC repair department hired Wong Tsu, who had earlier worked at the Navy factory in Fuchow. He rebuilt several damaged Loenings and modified all of them from amphibians into pure flying boats in the spring of 1931. As no airports were available on the Yangtze River route the wheel landing gear had been found unnecessary and it was decided to save weight by removing it.

The Hankow service was extended up river to Ichang on 1 April 1931 and to Chungking on 21 October[15]. CNAC planned to use the six Stinson Detroiters, which had been stored for the time being, on the Nanking-Peking route. Stinson No 9 "Tientsin" was sent on a proving flight from Shanghai on 1 March 1931 and landed at Tientsin on the 5th and at Nanyüan, Peking, on the 7th. The return trip to Nanking was made on 12-13 March. The Nanking-Hsuchow-Tsinan-Tientsin-Peking route was opened on 14 April, initially for airmail only, but had to close again on 8 June due to frequent engine malfunctions. Two of the Stinsons had cracked up their undercarriages on the same day in Nanking and a third had crashed. It was decided to replace the engines and the service was opened again with four aircraft on 12 September for mail, although flooding of the airfields delayed most flight for a few days, and from 15 October passengers were carried.

Stinson No 10 "Tsinan" crashed on Taishan Mountain, south of Tsinan, when on its way from Nanking to Peking

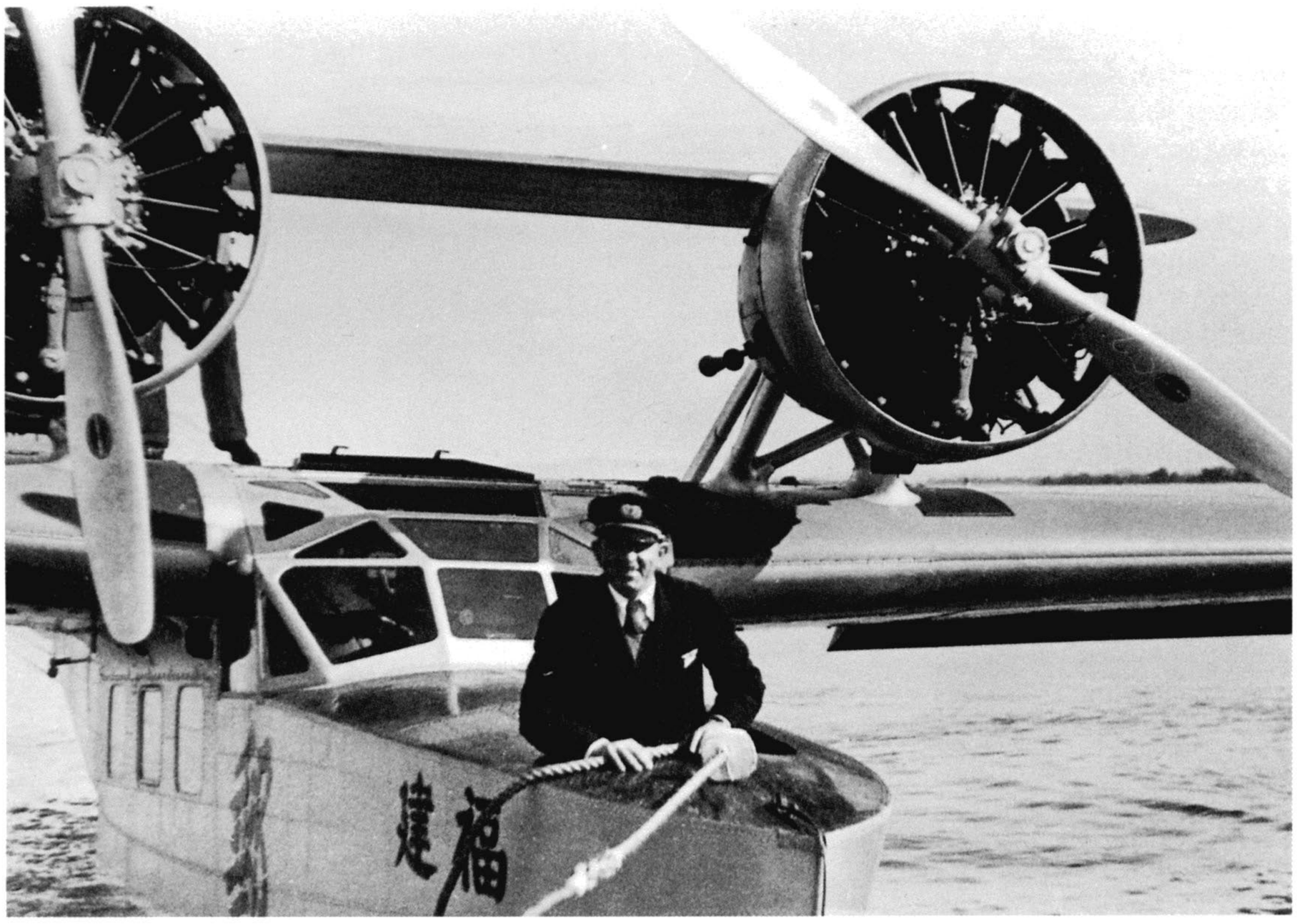
CNAC 1932-33

By January 1932 W L Bond was Vice-President and Operations Manager. Max Pollin was Manager of China Airways. The following pilots were employed: E M Allison, chief pilot since 1929, Cecil S Sellers, since February 1931, W G Davis, C S Vaughn, Eddie Smith, Eric Just and H D Norris, from September 1931. Just was German, a former instructor in the Japanese Army Air Service, and had been employed by CNAC since December 1930. In addition there were a number of Chinese co-pilots. Mechanics were Oscar C Wilk, chief mechanic from 1929, Charles Delay, from 1929, A C "Swede" Larsen, Richard Welch, Yates, and a number of Chinese. Unfortunately the names of the Chinese personnel are not known.

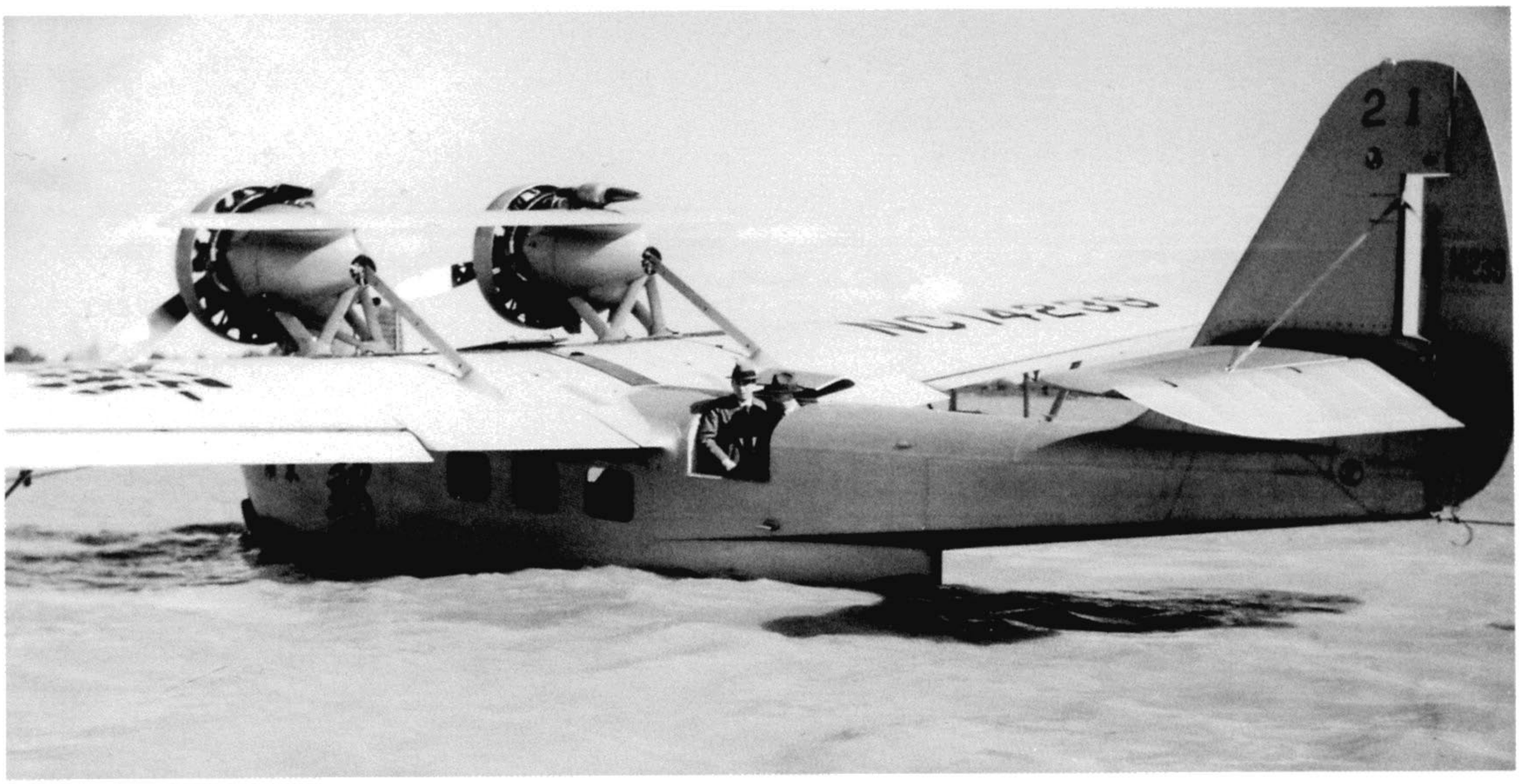
The aircraft inventory consisted of five Loening Air Yachts with Hornet engines, two new Loenings with Wright Cyclone engines, two Stinsons and two more of the same type being rebuilt. At Lunghua there was a repair shop, one small hangar and a seaplane base, which was being enlarged, and there were radio stations at every stop along the routes.

By March 1933 CNAC had five Stinsons, of which only one was serviceable, and five Loenings. There were six American pilots, one German (Eric Just) and a few Chinese co-pilots.

15 A proving flight to Chungking was made by Allison and Vaughn on 11 October 1931. The terms laid down by Marshal Liu Hsiang, the warlord of Szechwan, for the right to fly within his territory were 1) payment to him of 15 % of CNAC's gross intake on the route, 2) transportation of opium from Chungking to Shanghai.



CNAC Chief Pilot Ernest M Allison in Douglas Dolphin No 22 "Fukien".



Douglas Dolphin No 21 "Kwangtung" still carries its American registration number, NC14239.

on 18 November 1931 and was completely destroyed. Two other Stinsons were seriously damaged in November/December and the Peking service had to be closed again on 25 December.

By July 1931 only two of the Loening Air Yachts were serviceable and on 11 August "Hankow" (CNAC No 3) crashed and sank in the river when attempting to land at Hankow. During the same month two modified Keystone-Loenings with Cyclone engines (No 14 "Ichang" and No 15 "Wanhsien") went into service. Another Keystone-Loening arrived in Shanghai in March 1933. It was assembled at Lunghua and was christened "Chengtu" (CNAC No 16).

The Shanghai-Peking service was reopened on 10 January 1932, but was soon out of operation again and was then permanently discontinued. Captain Allison made a trial flight between Hankow and Siangyang, part of a planned Hankow-Sian route, on 8 January 1932. When the Japanese attacked Shanghai at the end of the month CNAC halted all services. They resumed flying on 7 February, however, in spite of Japanese protests. All aircraft were now painted green, the traditional Chinese colour for mail, to mark them as civil machines. The service to Peking was reopened again on 5 April via Loyang and CNAC operated a special service between Shanghai and Nanking from 6 April because of the recent war emergency.

Liu P'ei-ch'üan, former head of the Yünnan Air Force was appointed new CNAC director in May 1932. In August a Loening flown by Charles Vaughan was hit by 30 bullets fired by "bandits" in the vicinity of Shasi, Szechwan, but no one was hurt, and on 12 December Loening No 15 "Wanhsien" was lost in an accident at Hankow. The Peking service was reopened with Stinsons on 10 January 1933, but it was now routed Shanghai-Haichow-Tsingtao-Tientsin-Peking.

CNAC in 1934

By the end of 1934 CNAC had five C-2-H and two K-85 Loenings, four Stinsons and two Dolphins. There were one German and eleven American pilots and twelve Chinese co-pilots. The Lunghua Commercial Airport had been completed with two crossing runways, a number of hangars and a slipway.

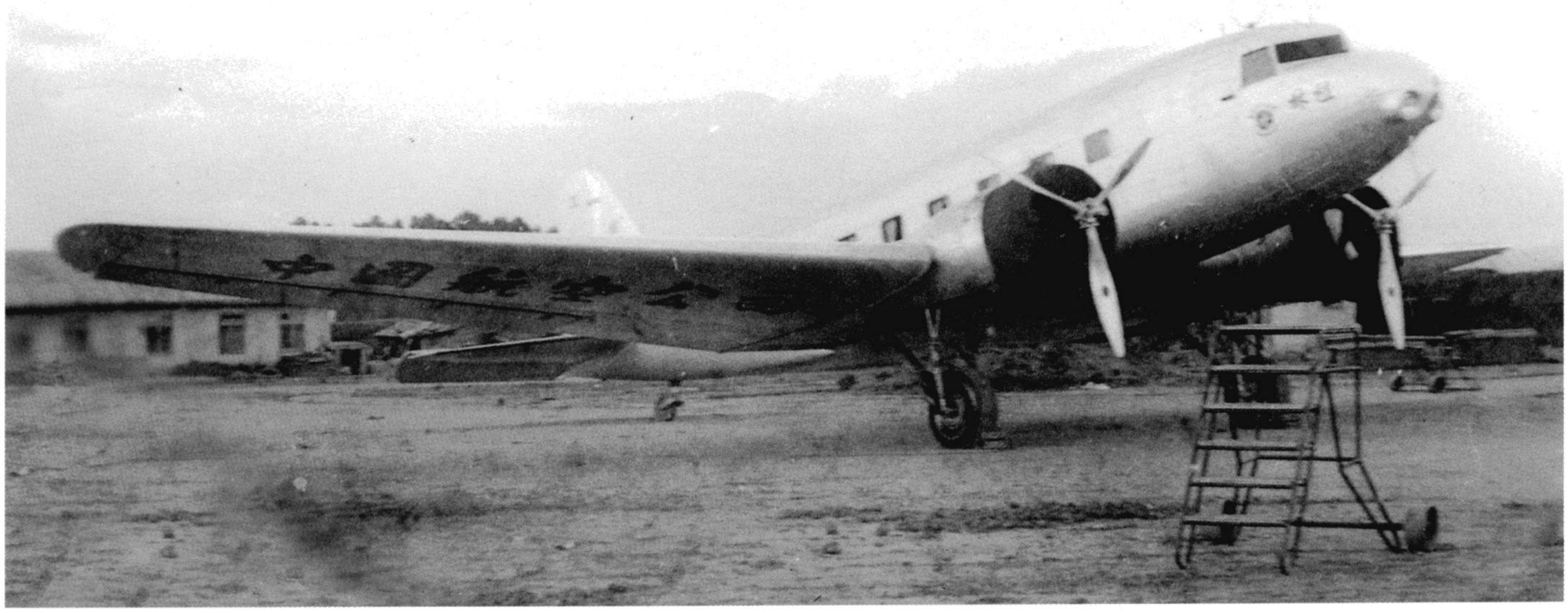
Pan American Take-Over

In March 1933 Pan American Airways Corporation succeeded in buying the China Airways part of CNAC through its holding company, the American Inter-Continent Aviation Inc. After the transaction 45 % of the CNAC stock was held by Pan American Airways. The take-over was notified by the Nanking Government on 24 February and was made effective on 1 April. Tai En-ki superseded Liu Pei-ch´üan as Managing Director in December 1932 and remained at this post until 1937.

CNAC's concession for a planned Shanghai-Canton service was to expire on 8 July so the route had to be opened before that date. The Pacific American Airways Company was set up in Shanghai as a Pan American subsidiary to operate the route and Harold M Bixby became Vice President. Three Sikorsky S-38B twin-engine amphibians were brought in by Pan American, who also sent flight, maintenance and radio personnel in the form of two pilots, two co-pilots and three mechanics. The first two aircraft were shipped in May 1933 on the "Gertrude Maersk", and were accompanied by pilots George Rummel and Robert Gast. They arrived in Shanghai on 26 June. One (CNAC No 17) was assembled and test-flown on 1 July and a survey flight to Canton was made two days later, followed by a flight to Manila on 14-29 August. The opening of the Canton service was postponed, however.

After a new trial trip on 24 October a Shanghai-Wenchow-Foochow-Amoy-Swatow-Canton service was finally inaugurated on 24 November. Because of heavy fog the first scheduled flight ended with a forced landing on East Chusan Island, Hangchow Bay, however, and a destroyed aircraft. None of the passengers were fatally injured, however. The service was resumed with the second Sikorsky (CNAC No 18) on 28 November.

On 28 May 1933 a Stinson took off from Hankow for Chungking and on 1 June it reached Chengtu for the first CNAC visit to that city. This service was opened for scheduled flights on 4 June but was suspended by the Nanking Government on 15 June due to fear that the aircraft might be seized by the local military at Chengtu. The daily



CNAC:s fifth Douglas DC-2, No 32 "Kweilin", photographed at Kunming. (Wings of China)

Shanghai-Chungking service was extended to Chengtu again on 11 November the same year. By September 1933 the CNAC aircraft inventory included six Loenings and five Stinsons. There were one German, one French and ten American pilots.

The Canton route was suspended again when Sikorsky S-38B CNAC No 18, piloted by Robert H Gast and co-pilot James Frink, crashed in Hangchow Bay on 10 April 1934. CNAC ordered two Douglas Dolphin twin-engine amphibians to replace the Sikorskys and these arrived late 1934 or early 1935. They were named "Kwangtung" and "Fukien" (CNAC No.s 21 and 22). The route was reopened on 28 November 1934 with the last remaining Sikorsky (CNAC No 19), but this aircraft was destroyed in a storm on 13 August 1935.

CNAC planned to replace the Loenings used on the Shanghai-Chengtu line with Fairchilds, the Stinson Detroiters on the Shanghai-Peking line with Lockheed Electras and the Sikorskys on the Canton route with Consolidated Commodores and in June 1934 it announced that it intended to order two Electras for the Hankow-Shanghai route. All these plans had to be shelved, however, probably due to financial restrictions. Four Fairchild F-91 ten-place single-engine amphibians were ordered off the drawing board by Pan American for CNAC, but this order was cancelled when new safety regulations were passed, which prescribed the use of multi-engine aircraft only for passenger services.

CNAC October 1935

Board
H M Bixby (Manager China Airways), W L Bond (Executive Vice-president), Tai En-ki (Managing Director) and E M Allison (Operating Officer and Chief Pilot)

Routes
Shanghai-Chengtu (1 DC-2), Shanghai-Hankow (1 Ford), Hankow-Chungking (Loenings), Chengtu-Chungking (1 Stinson), Chungking-Yunnanfu (1 Ford), Shanghai-Peking (1 DC-2 and 1 Stinson) and Shanghai-Canton (2 Dolphins)

Pilots
E M Allison, C S Sellers, C S Vaughan, E Smith, C L Sharp, J R McCleskey, F J Havelick, A R Kidder, B O'Hara, F E Nelson, H F Mitchell, H L Woods, E Just and D Wang. Donald Wang was an American-born Chinese who had trained to pilot in Chicago. All co-pilots were Chinese.

Aircraft
6 Loenings, 5 Stinsons, 2 Dolphins, 2 DC-2s, 2 Ford Tri-Motors and 1 three-seat Stearman. A third Ford (CNAC No 27 "Shanghai") was on order and was to arrive in October, and four Sikorsky S-43s had been ordered but had not yet been shipped.

Douglas DC-2s and Ford Tri-Motors

Several new aircraft were acquired in 1935. A Ford Tri-Motor arrived early in the year and was followed by two more later on. A Douglas DC-2 was delivered in March and was joined by a second example in August. The DC-2 had accommodations for a crew consisting of pilot, co-pilot, radio operator and steward, and 14 passengers, while the Ford seated pilot, co-pilot and 11 passengers. A flying school was established by CNAC at Lunghua Aerodrome

A new Douglas DC-2 arrives in Shanghai. CNAC obtained a total of eight of these aircraft.

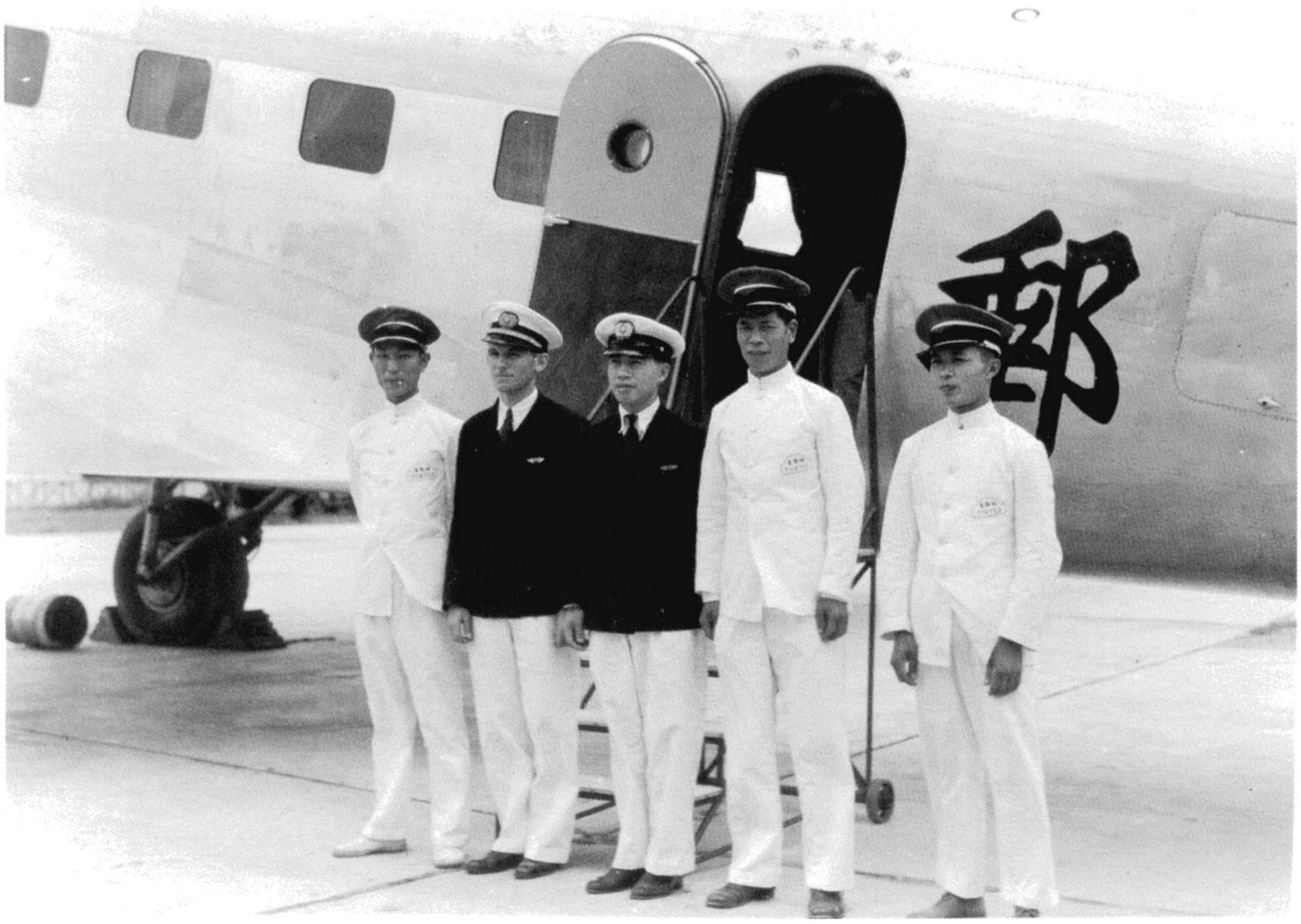
and a Stearman trainer was received in January 1935, but unfortunately the exact model is not known[16]. It was named "Lunghua" (CNAC No 20) and was used for giving instruction to Chinese pilots.

The first Ford Tri-Motor was intended for a new Chungking-Kweiyang-Kunming (Yünnanfu) route, which was to have been opened on 1 April 1935. A proving flight had been made along this route at the end of December 1934 with a Stinson. The Ford, CNAC No 23 "Kunming", was ready on 25 March, but was for a period commandeered by the military to transport staff officers and supplies from Chungking to Kweiyng. It was also used for the evacuation of missionaries from Chengtu to Chungking. The Yünnan route was opened on 4 May 1935. The Ford Tri-Motor was used on the Shanghai-Hankow section from 20 September, and the Douglas DC-2 was put in service on the same route on 23 October. The DC-2 was used on the Shanghai-Peking service from 18 May 1935.

On 1 July 1935 CNAC had six Loening Air Yachts, five Stinson Detroiters, one Douglas DC-2, two Douglas Dolphins, one Sikorsky S-38, one three-seat Stearman and one Ford Tri-Motor. One of the Loenings, No 14 "Ichang", had been withdrawn from use in March and scrapped, and No 16 "Chengtu", piloted by H Broiles and Y K Wong, had crashed into the water near Lunghua aerodrome on 18 May.

A proving flight to Hanoi was made in November 1935 and on 14 February 1936 this route was to have been opened, but because of unsuitable weather the first aircraft got only as far as Fort Bayard. Due to protests from the South Western Aviation Corporation this route was not operated again until in 1939. Pan American had started trial flights over the Pacific and their San Francisco-Manila service was opened on 3 December 1935. On 25 October 1936 a Trans-Pacific Clipper, Martin M-130 flying boat, arrived in Hong Kong for the first time.

16 It seems to have been a three-seater, but some sources describe it as a two-seat trainer with 200 hp (possibly Wright J-6-5) engine.



The crew of a CNAC Douglas DC-2.

Routes operated by CNAC at the end of 1936

Shanghai-Chengtu (DC-2)
Shanghai-Hankow (Ford, DC-2)
Hankow-Chungking (Loening)
Chungking-Chengtu (Stinson)
Chungking-Kweiyang (Stinson) - suspended
Shanghai-Peking (DC-2, Stinson)
Shanghai-Hong Kong-Canton (Dolphin)

In February 1936 famous explorer Dr Joseph F Rock chartered Ford Tri-Motor "Kunming" (CNAC No 23) with pilot Byron O'Hara for a special flight from Yünnanfu. O'Hara crashed with the same aircraft on 5 March near Pengyi, while flying the route from Chungking to Kweiyang, and the aircraft was completely demolished but there were no injuries. Later in the same month another Ford (CNAC No 25 "Hankow") piloted by C L Sharp caught fire on approach to Nanking. Sharp was able to land but the aircraft was destroyed.

CNAC inaugurated a Hong Kong extension to the Shanghai-Canton line on 6 November 1936 and this service was operated with Douglas Dolphins. By the end of 1936 the CNAC fleet consisted of four Loenings, five Stinsons, a pair of DC-2s, a single Ford and two Dolphins. Two Sikorsky S-43 twin-engine flying boats and three Douglas DC-3s were on order, but delivery had been delayed because of a shipping strike in the USA[17]. Two Ford Tri-Motors and one DC-2 had been written off during the year as a result of accidents, but no fatal injuries had occurred. The DC-2 was No 28 "Szechwan", which crashed at Chengtu on 25 December. CNAC had ten American and four Chinese pilots and 14 Chinese co-pilots, 11 American and 60 Chinese engineers and mechanics.

The first Sikorsky S-43 arrived in Shanghai in the middle of January 1937 and it was erected at Lunghua, but was immediately requisitioned permanently by the Government and was placed at the disposition of Chiang Kai-shek. The second Sikorsky arrived in March. It was named "Chekiang" (CNAC No 30) and was put in service on the Shanghai-Canton-Hong Kong route. It was destined to be short-lived, however, and was written off after an accident in bad weather on 8 August 1937 at Chilang Point, north of Hong Kong, while on its way to Shanghai. It was piloted by Ed Smith with George Ohrnberger as co-pilot at the occasion. Two new DC-2s arrived in Shanghai in June 1937. One was put in service as No 31 "Chungshan", but the other had been so badly damaged during transport that it could not be repaired locally[18].

China-Japan War

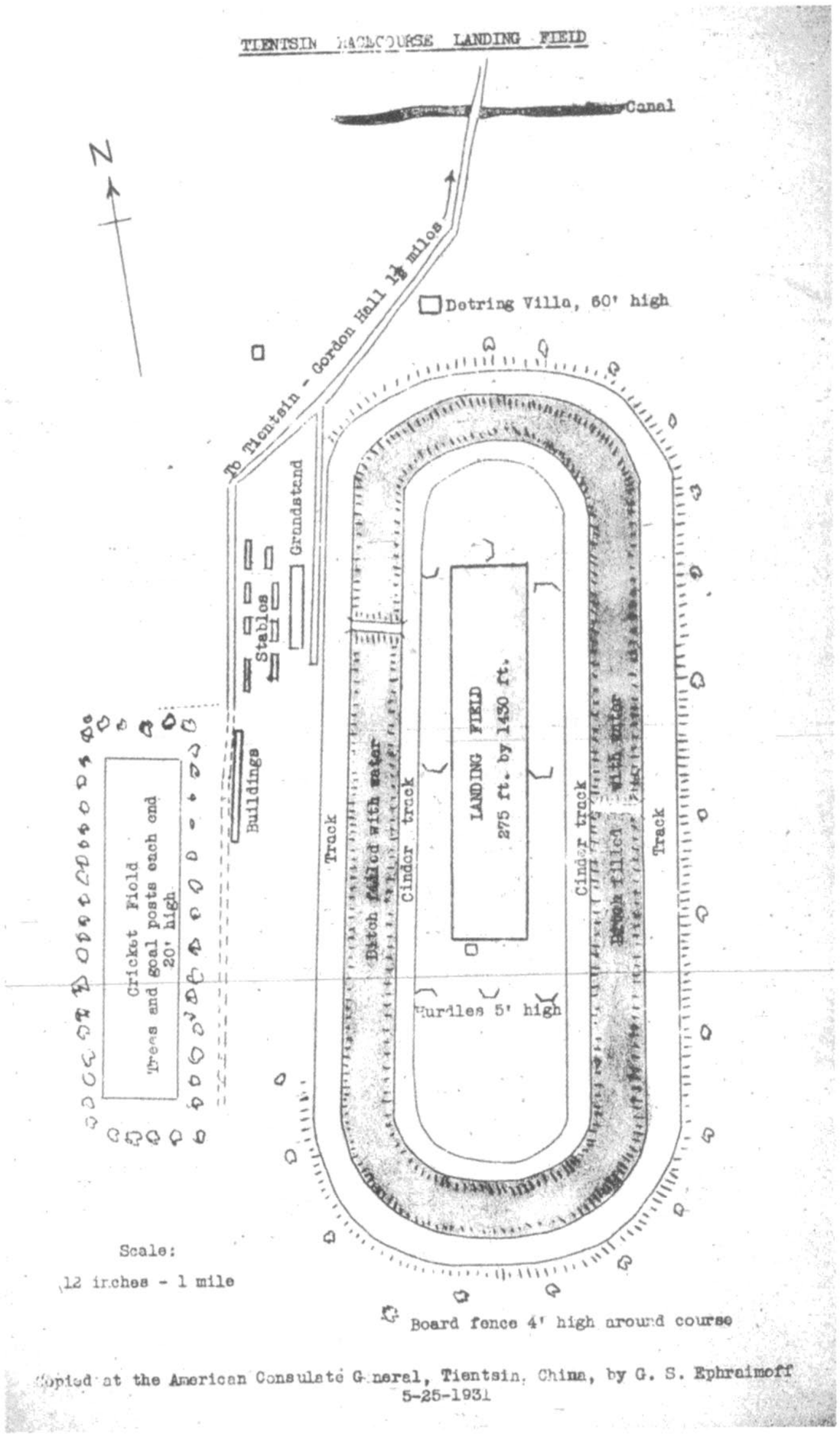
When the war with Japan started in July 1937 a number of Air Transport Commands (Hang-k'ung yün-shu tui) were set up by CNAC to help the CAF. Some of the aircraft, including Ford Tri-motor No 27, were impressed and CNAC in fact became a semi-military operation when all civilian airline services were suspended on 22 August. From 18 April 1940 the Air Transport Commandos were subordinated to the Transport Control Bureau of the Military Commission (Chün-shih wei-yüan-hui yün-shu t'ung-chi chü).

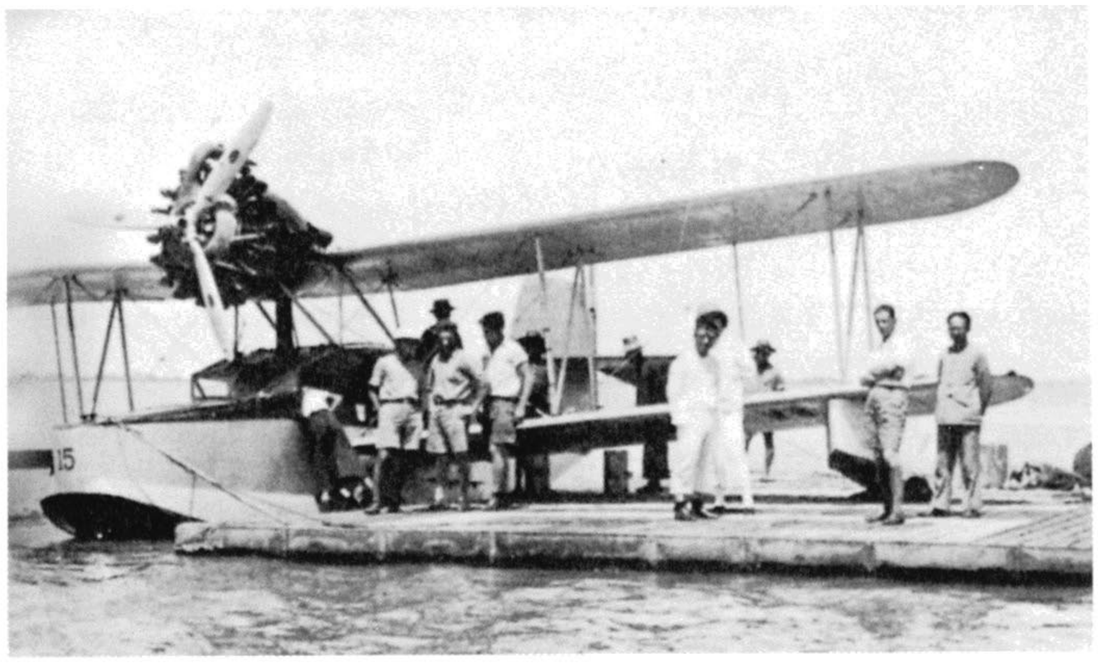
The CNAC workshops and headquarters were evacuated to Hankow on 24 August 1937 and to Chungking on 3 January 1938. One aircraft was allegedly destroyed by Japanese bombs at Lunghua. Loening No 4 "Kiukiang" was sunk at Wuling on 25 September 1937 and No 5 "Wuchang" was left in Tung Hu Lake when Hankow was evacuated. All American personnel, including Director William Bond, went to Hong Kong and stayed there for six months. Bond resigned from Pan American and took over the management of CNAC as an employee of the Chinese Government.

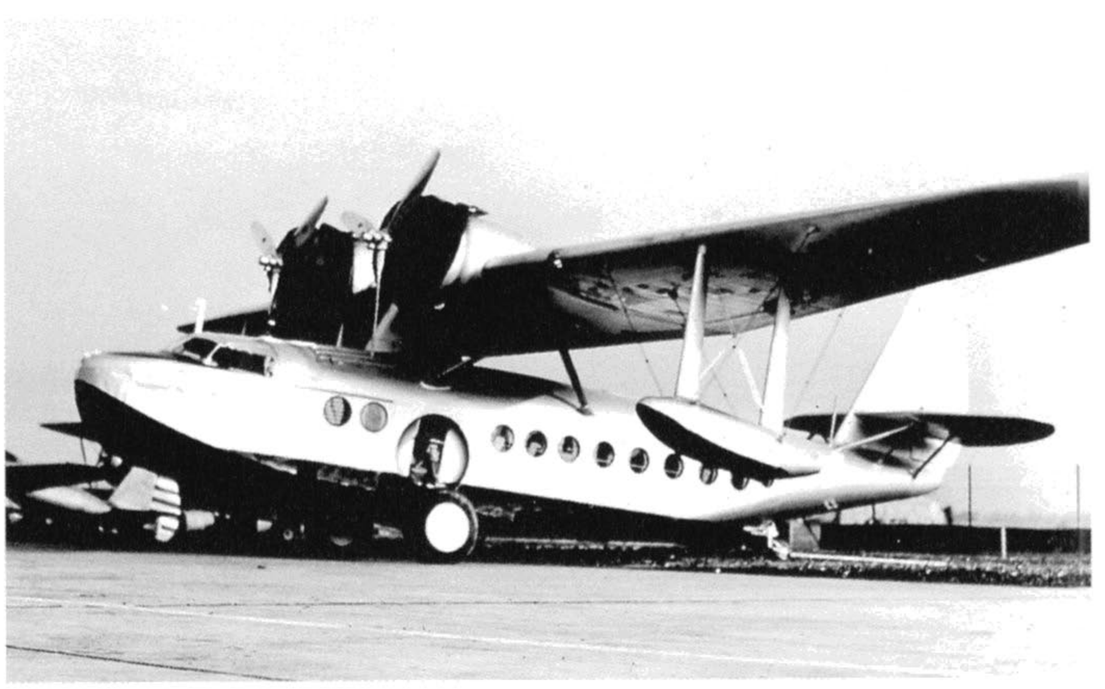
A new route structure had to be developed. From 3 December 1937 a Hankow-Changsha connection was operated with Stinson aircraft and a Chungking-Kweilin-Hong Kong route was operated with DC-2s from 16 December. There was a "new start" for the company in the spring of 1938 when operations

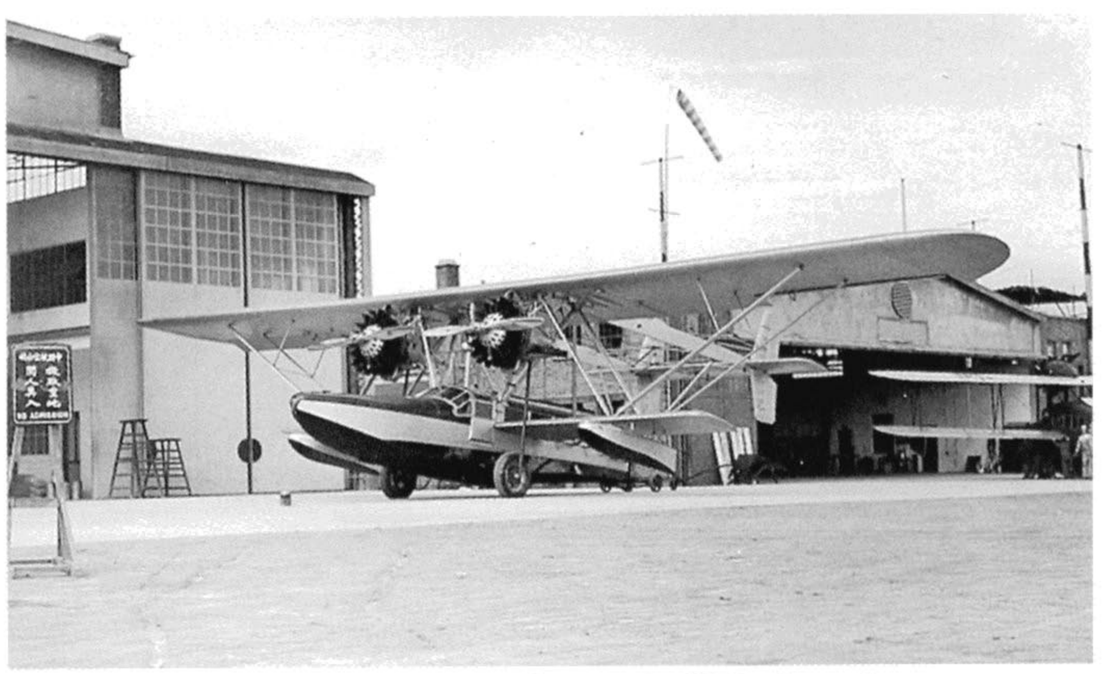
17 For some reason these DC-3s were never delivered and CNAC received its first DC-3 only in 1939.
18 According to other information one of the aircraft's wings had been dropped in Japan when the aircraft was transhipped and had to be returned to the USA for repairs.

Three DC-2s lined up at Shanghai: No 26 "Chengtu", No 24 "Nanking" and the DC-2 that was operated by the Government as Chiang Kai-sheks personal transport.









Top: Keystone-Loening Air Yacht No 15 "Wanhsien".
Centre: Sikorsky S-43W.
Bottom: Sikorsky S-38B.

from Chungking got under way. The airport there was considered too small, however, and suffered from constant Japanese air attacks.

After lying idle for many months the new DC-2, which had been damaged during transport (CNAC No 32 "Kweilin"), could finally be assembled at Kai Tak in May 1938 for the Hong Kong-Chungking route. A pair of Consolidated Commodore twin-engine 22-passenger flying boats was acquired second-hand and delivered in January 1938 for the Chungking-Hangkow service. They were christened No 34 "Wuchow" and No 35 "Changsha". A Chungking-Kiating (Loshan) service via Luhsien and Suifu (Ipin) was inaugurated with a Loening amphibian on 20 May 1938.

The Japanese started to attack civil Chinese aircraft and soon the first victims of this tactic were claimed. On 24 August 1938 DC-2 No 32 "Kweilin" with Hugh L Woods at the controls was shot down by Japanese aircraft at Chungshan, north of Macao, and strafed after being downed. A total of 14 lives were lost but the aircraft was later rebuilt. The service to Hong Kong was suspended but was resumed again on 11 October as a night-time service in order to avoid Japanese fighters. Royal Leonard joined CNAC in October 1938 to fly by night out of Hong Kong to Liuchow and Chungking with Chief Pilot Charles L Sharp.

Between 22 and 25 October two CNAC DC-2s evacuated 296 government officials from the temporary capital Hankow. The two Commodores also participated in the evacuation, making 15 flights, one of them to Hangyang with Chiang Kai-shak on board.

On 17 November 1938 the CNAC board decided on a five-year prolongation of the agreement with Pan American. Several aircraft were transferred to CNAC from the CAF. The first was a Ford Tri-motor, No 29 "Kweichow", which was lost at Shasi on 18 August 1937. One of the CAF Spartan aircraft became CNAC No 33 and DC-2 No 36

The Attack on DC-2 No 32 "Kweilin

Captain Hugh Woods took off in DC-2 "Kweilin" from Kai Tak, Hong Kong, at about 8 AM on 24 August 1938. He was heading for Chungking with fourteen passengers. Right after crossing the boundary between China and Hong Kong he sighted eight other aircraft as he was climbing through 6,000 feet on a course of 297 degrees. He had met with Japanese military aircraft on previous occasions and had not been attacked. The DC-2 was a commercial aircraft and had "CNAC" painted in large black letters on the upper and lower surfaces of the wings and the Chinese character for "mail" on the fuselage.

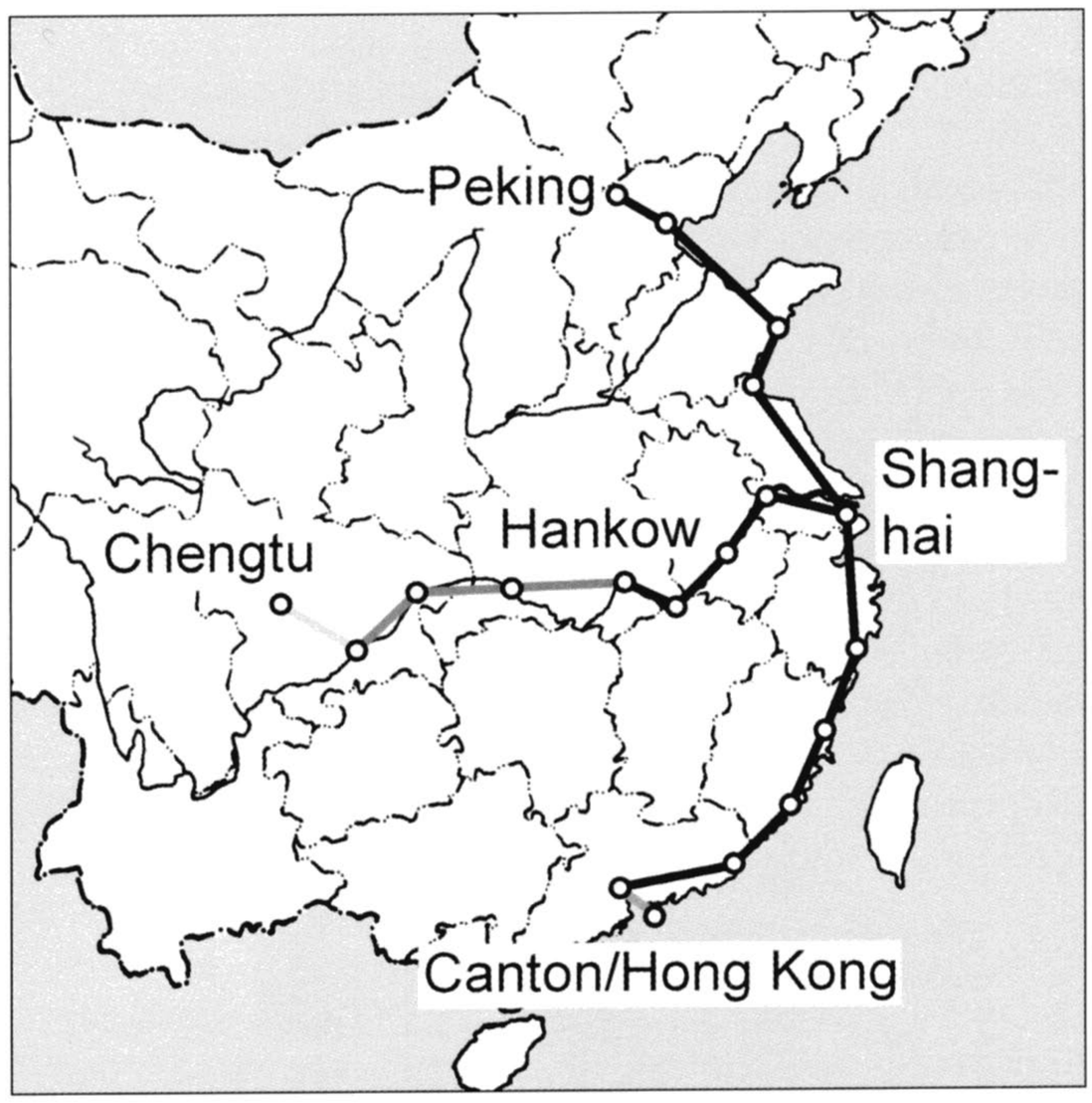
To be on the safe side Woods turned back toward the border until the Japanese planes disappeared and then resumed his original course. As he reached the western end of the bay between the territory of Hong Kong and the Chinese mainland, north of Macao, five Nakajima fighters suddenly attacked! Woods put the DC-2 into a steep dive, trying to reach some clouds 5,000 feet below.

Machine-gun bullets hit the aircraft and entered the cockpit. Woods spiralled down with a Japanese fighter behind him, attempting to find somewhere to land. He headed for a river, shut off the engines, cut the switches, and glided into a landing on the water. The aircraft was hit again by machine-gun bullets but landed safely near the shore of the river. The current caught it, however, and swept it into the middle of the river.

None of the passengers had been injured until Japanese fighters came down to strafe the aircraft, forcing the passengers and crew to jump into the water and start swimming. Several Japanese fighters continued to machine-gun the aircraft and the people in the water. Woods reached the shore in a state of complete exhaustion and survived, as did the radio operator and one of the passengers. Fourteen died and nine of the bodies bore machine-gun bullet wounds.

The following is from the Japanese diplomatic report on the incident:

"On the morning of the 24th instant, five Japanese naval aeroplanes proceeding in the direction of the Canton-Hankow railway, unexpectedly sighted over Chiautau Island at 9:30 o'clock AM a large type land plane bearing no indistinguishable mark some 2,000 metres away..."
"...there was some time, though very brief, after the landing of the said plane until a doubt came to be entertained as to its nature, and during that brief period there were some among our crafts which continued the attack, but there was absolutely no more shooting thereafter."



CNAC's main route network.

"Kwangtung" was received from the CAF as well. Early in 1939 a Beechcraft 17 (CNAC No 37) and a DH 89 Dragon Rapide (CNAC No 38) joined the others.

By January 1939 the company operated two DC-2s, one DC-3, one Ford Tri-Motor, two Commodores, a de Havilland DH 89A Dragon Rapide and a small number of other aircraft, but one of the Commodores, No 34 "Wuchow", was damaged at Wanhsien on 1 February. A proving flight from Canton to Hanoi via Kunming was made with a Dolphin on 14 February and this route was opened with a DC-2 on 15 March. The Beech 17 made the first proving flight from Chungking to Rangoon in Burma on 21 February and the first scheduled trip to this destination via Kunming and Lashio took place on 30 October 1939.

A new DC-3 and a second-hand DC-2 were ordered. The DC-2, CNAC No 40 "K'angting", was delivered in May 1939 and the DC-3, CNAC No 41 "Chiating", was test flown at Kai Tak in November the same year. It had arrived in Hong Kong on board a Norwegian ship on 11 September. With both these machines CNAC was reported to have six Douglas aircraft, including "Kweilin", which had been repaired and renamed No 39 "Chungking", five Stinsons, a Beech 17, two Dragons Rapides, a Commodore, two Dolphins and three Loenings[19]. There were five American and nine Chinese pilots. A new DH 89A Dragon Rapide was delivered to Hong Kong in July 1939 and it seems that this became CNAC No 43 "Fuling", which arrived from Hong Kong to Chungking on 25 January 1940.

Stinson No 7 "Changchow" was damaged and No 11 "Hsuchow" was destroyed during a Japanese air raid on Chengtu on 4 November 1939. In December a Ford Tri-Motor, probably another example transferred from the CAF, entered service as CNAC No 42 and on 27 January 1941 Stinsons No 8, 9 and 12 and Dragon Rapide No 38 were destroyed in a hangar fire at Sanhupa.

In June 1939 an American officer made a visit to the

19 In fact only one Douglas Dolphin remained, as No 21 had been destroyed in August 1937. No 22 was unserviceable and waiting for repairs. The three Loenings, No 1, 2 and 6, were sold as scrap in May 1941.

CNAC:s Douglas DC-2s lined up at the Shanghai airport.

CAF. His report on the flight with a CNAC DC-2 piloted by Hugh L Woods to Chungking is quite interesting. The aircraft left at 2:55 in the night. Probably for security reasons the trips were not scheduled for any particular time but there were usually two per week and they left at an hour determined by the pilot. On board was a Chinese co-pilot and a radio operator, a load of mail and express that overflowed the seats, and nine passengers. After taking off, the pilot climbed to 9,000 ft while remaining over British territory, then flew due north for one half hour until heading for Kweilin, where the aircraft landed after a flight of 2 hours and 48 minutes. The American officer was permitted to act as co-pilot during almost the entire trip and he did not like the flying conditions with frequent blind flying for ten or fifteen minutes and often through heavy rainstorms. Woods on the other hand considered the conditions ideal as it gave him an opportunity to pass over the Japanese lines without interference. He had already been shot down once by the Japanese with the loss of 14 lives...

At Kweilin Japanese bombing had destroyed most of the buildings. The DC-2 continued to Chungking and landed at the CNAC aerodrome, which was on an island. There were no permanent buildings. Three DC-2s were on the field and also a "small two-engined English biplane", probably a de Havilland DH 89A Dragon Rapide, a Stinson, and a Loening amphibian was being rebuilt. One of the DC-2s belonged to the CAF, but was operated by CNAC personnel. It was used four days a week by the Commission on Aeronautical Affairs and three days by CNAC. On the river were a Douglas Dolphin and a Consolidated Commodore.

Five Curtiss Condor twin-engine freight transport biplanes were purchased second-hand in 1939. CNAC had been looking for cheap freight-carrying aircraft for the transport of wolfram ore (tungsten) from Kunming to Hanoi (Haiphong) and had acquired the Condors from the USA. They had been stored in Mexico for over a year and had originally been intended for Republican Spain, where they were to have been used as bombers. They were shipped to Hong Kong early in 1940, but initially only three of them were made airworthy

A new DC-3 was acquired (from Air France) in 1940 and shipped in December, followed by a second machine of the same type in 1941. In addition two of the Vultee V-1As acquired by the Chinese Government in February 1940 were assigned to CNAC as No 44 and No 45. Losses "due to enemy action" continued as well and Consolidated Commodore No 35 "Changsha" was destroyed during an air raid on 16 September 1940. The company's last Stinson, No 7 "Changchow", was destroyed on the ground in another raid on 14 January 1941.

The Hanoi line was suspended but in September a new

CNAC Traffic Statistics, 1929-1947

Year	Km flown	Passengers	Mail (kg)	Freight (kg)
1929	93,369	220	3,932	
1930	531,266	1,979	17,893	
1931	716,513	1,989	34,428	
1932	694,143	2,741	50,851	
1933	1,074,868	2,644	50,183	
1934	1,434,862	4,545	63,234	
1935	1,906,452	9,147	74,045	26,763
1936	2,483,572	15,748	86,466	46,940
1937	2,061,093	12,758	85,470	41,732
1938	1,307,918	13,701	124,463	76,007
1939	1,179,295	16,546	102,093	117,375
1940	1,616,794	16,432	82,756	496,499
1941	2,127,377	21,292	90,271	5,477,409

Note: Freight carried between India and China not included. This is just an example of CNAC statistics. Other versions with different figures exist.

Year	Passengers	Mail (kg)	Freight (kg)
1942	26,867	55,018	4,298,309
1943	33,224	61,183	19,611,124
1944	39,263	93,783	27,090,690
1945	57,670	256,592	27,307,691
1946	292,510	1,262,000	8,826,000
1947	173,317	2,451,385	14,145,962

Shanghai Airport with four Douglas DC-2s parked on the apron.

route between Hong Kong and Nanhsiung (Namyung) in Kwangtung was opened with the Condors on 8 October 1940. On occasions each aircraft made two round trips per night to Nanhsiung, which was the site of a tungsten ore mine. In January 1941 a proving flight was made on the Chungking-Kunming-Calcutta route with a DC-3.

The Japanese posed a deadly danger to all CNAC aircraft. On 29 October 1940 DC-2 "Chungking" (CNAC No 39), piloted by Walter C Kent, was attacked on the ground at Changyi in Yünnan and destroyed. Kent had been en route from Chungking to Kunming with ten passengers and four crewmembers on board. About 100 miles northeast of Kunming, he ran into a flight of five Japanese fighters and decided to land at a small emergency field near Changyi. The Japanese started to strafe the aircraft as it taxied off the runway. On their first pass, Kent was hit in the back by a 20-mm shell and died instantly. The passengers were evacuated as the left wing caught fire, but they were machine-gunned while crossing the field in search of shelter and a total of nine people were killed and two wounded.

On 20 January 1941 CNAC's last Ford Tri-Motor (CNAC No 42) crashed at Kian in Kiangsi with Bernhard Wong at the controls and a DC-2 (CNAC No 40) flown by Joy Tom crashed at Taohsien in Hunan on 7 (or 12) February 1941. He was flying a cargo of currency from Hong Kong to Chungking, but never arrived at his destination. On 20 May a new DC-3 (CNAC

CNAC's Loening Air Yacht No 4 "Kiukiang" was lost when it sunk on 25 September 1937.

No 46 "Ermei") piloted by Hugh Woods was attacked and forced down by Japanese bombers while en route from Chungking to Chengtu. It force-landed on Suifu (Ipin) airfield and was bombed while on the ground, but this time the crew and the passengers escaped. A bomb damaged one wing, which meant that the aircraft could not be flown to safety in Hong Kong.

Delivery of a new wing from the USA would take three or four months. There was a spare DC-2 wing of smaller dimensions at Hong Kong, however, and another CNAC pilot, Harold Sweet, flew to Siufu with the DC-2 wing strapped to the fuselage bottom of his DC-2. The wing was fitted to the damaged DC-3 and the "DC-2½" was then flown out to Hong Kong for repairs!

On 21 September 1941 a DC-2 crashed on Saikung Road in Hong Kong. It was caught by a sudden gust of wind while attempting to land at Kai Tak and crashed into a building just outside the aerodrome. Pilot Moon F Chinn and the rest of the crew escaped with minor injuries, however, and there were no passengers. This aircraft was later repaired. On arriving from Namyung a Curtiss Condor (CNAC No F2) with three Chinese crew members crashed in Kowloon Bay on 28 October.

Surprise Attack

The Japanese surprise attack on Hong Kong on 8 December 1941 decimated the dwindling CNAC fleet even further. Three Curtiss Condors (CNAC No F1, F4 and F5) and two DC-2s (No 24 and 26) were destroyed by strafing and bombing Japanese fighters and bombers. A Condor, a DC-3 and a Vultee were inside a hangar and remained undamaged. At dusk two other CNAC aircraft, a DC-2 and a DC-3, arrived to take part in the evacuation of beleaguered Hong Kong that took place during the first two nights of the Japanese siege. The DC-2 and the two DC-3s left in the evening and CNAC then ferried out over 275 persons, including its own personnel. A total of 16 flights were made, some all the way to Chungking. Eight American and two Chinese pilots took part in the evacuation of Hong Kong. The Americans were Chief Pilot Hugh Woods, Robert Angle, Frank Higgs, Paul Kessler, William McDonald, Emil Scott, Charles Sharp and Harold Sweet, and the Chinese were Moon Chin and Hugh Chen.

On 10 December Hugh Chen, CNAC's first Chinese-born captain, flew the Vultee to Namyung. The remaining Condor (CNAC No F2) attempted to leave as well, but was forced to return to Hong Kong because of engine trouble. It was reportedly "machine-gunned and destroyed by Japanese aircraft". In fact the Japanese captured it intact and it was later painted with camouflage and Japanese national insignia and put in service with the Japanese Army Air Force. Hong Kong surrendered to Japan on 25 December.

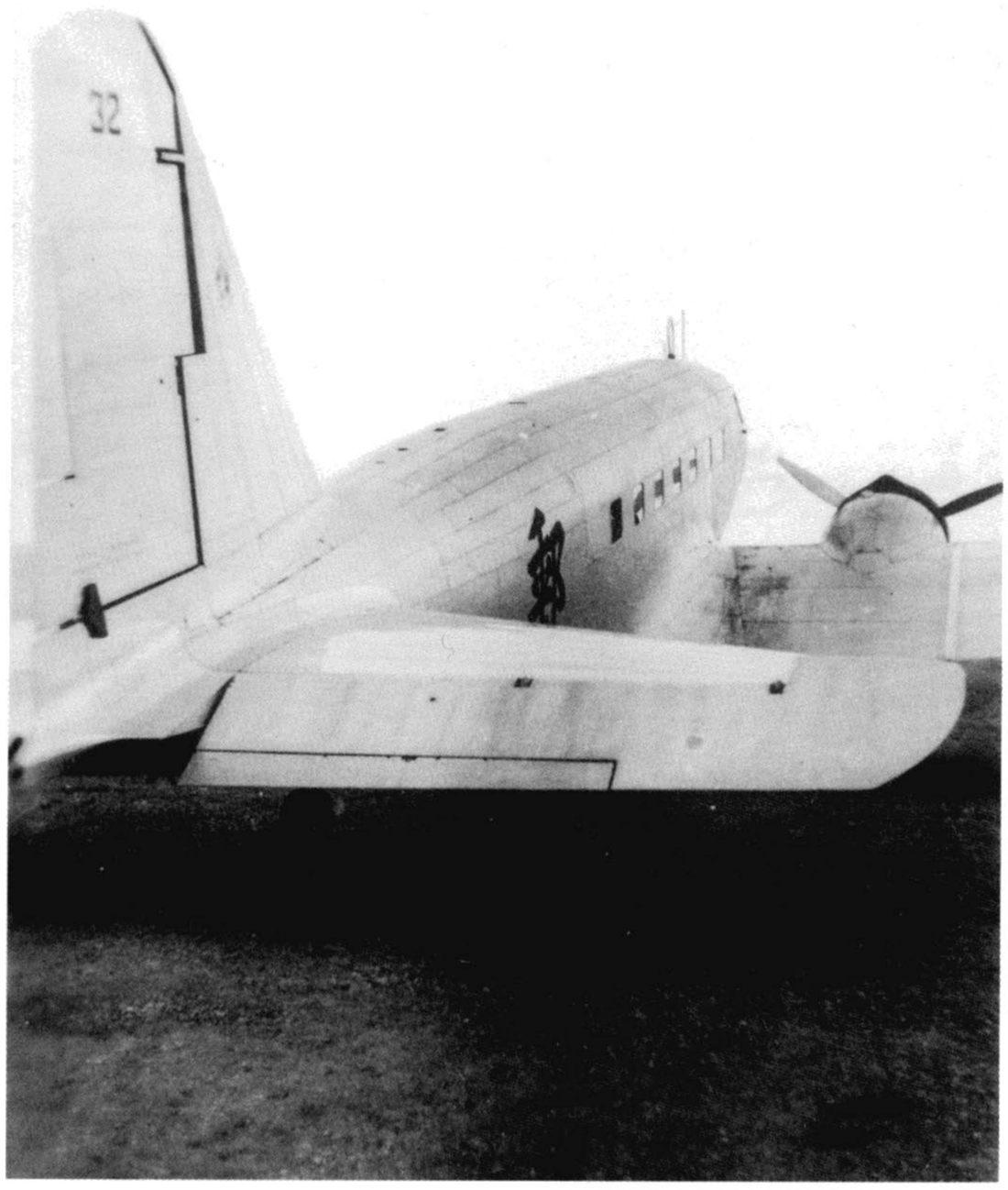
At about the same time as the dramatic events in Hong Kong took place on 18 December 1941, CNAC inaugurated a new service between Chungking and Calcutta in India. It ran over Kunming and Dinjan and DC-3 No 47, which had entered service in July 1941, was the first to fly this route. During the following year it was to become famous as "The Hump".

Early in 1942 CNAC had very few aircraft left: three DC-3s and a single DC-2. The last DC-2, CNAC No 31, crashed on 14 March 1942 near Kunming with Emil Scott at the controls. Scott, two other crewmembers and 10 passengers were killed. CNAC was scheduled to receive new equipment, however, in the form of Douglas C-53s, the military version of the DC-3. The first of 12 Lend-Lease C-53s (CNAC No 48-59) arrived on 1 March 1942, but these machines were to be used for Government duties only, mainly transport of material from India to Kunming, Ipin and Liuchow.

War Service

Already in May 1941 William Bond had submitted proposals for a supply route between China and India over the Himalaya, which was referred to by pilots as the "Hump". From 8 April 1942 CNAC operated a supply route between Myitkyina in Burma and Dinjan in Upper Assam, India, for about a month. When the Japanese took Rangoon on 13 April 1942 and Lashio on the 30th, the Rangoon line had to be suspended. The "Hump" service between Kunming and Calcutta via Dinjan started on 1 July 1942

A CNAC passenger on the stairs on front of one of the company's Douglas DC-2s.



Douglas DC-2 No 32 "Kweilin". This aircraft was attacked and severely damaged by the Japanese on 24 August 1938 but was repaired and named No 39 "Chungking" in 1939 - only to be attacked again and destroyed on 29 October 1940.

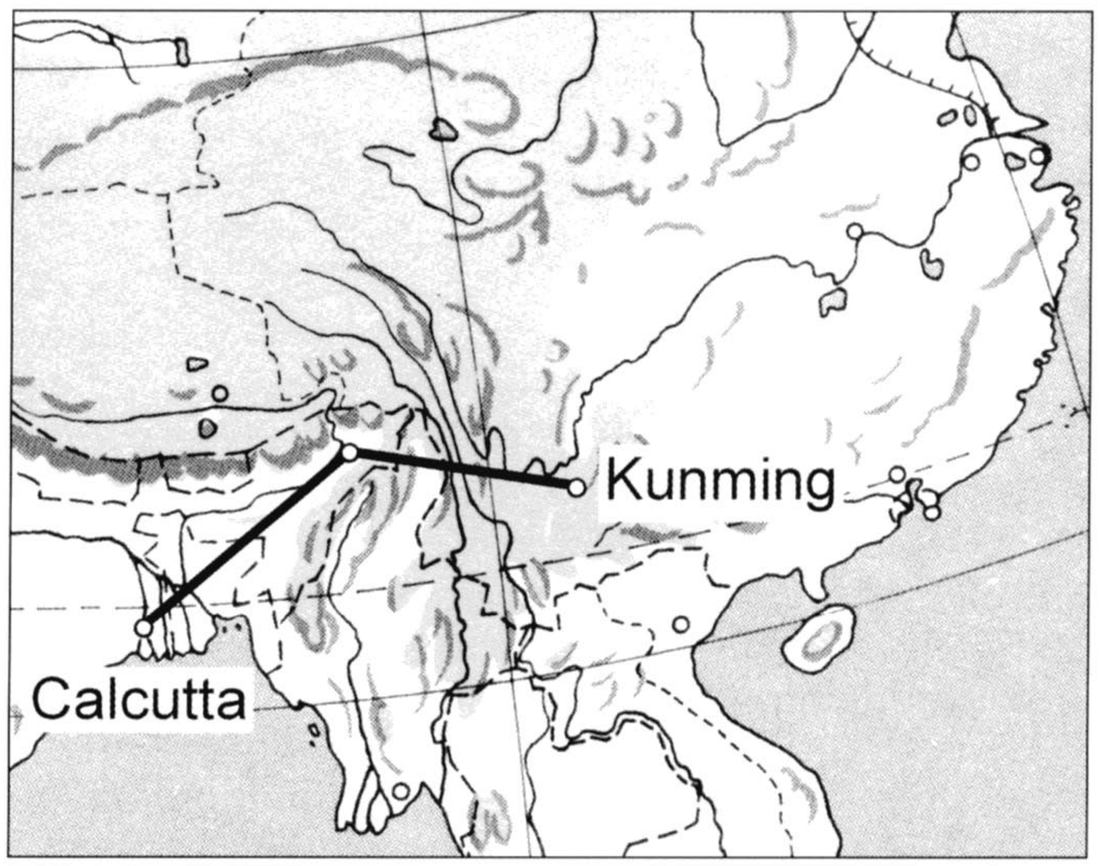
and a new Chungking-Lanchow route was opened on 27 August.

By 21 June 1942 CNAC had 13 aircraft in service, but in addition the USAAF operated 28 on the "Hump" service. By March 1943 CNAC still had only 17 aircraft, but the fleet of the Air Transport Command of the USAAF had grown to 115.

In July 1942 General Chennault urged CNAC to adopt an insignia for their aircraft to help the 14th Air force pilots to identify them. After considerable discussion an insignia consisting of a black circle with the Chinese character "Chung" (middle, a symbol for The Middle Kingdom, or China) superimposed in white was adopted was painted on all CNAC aircraft from May 1943. The two remaining Douglas DC-3s were registered XT-BTA and XT-BTB. Lend-lease C-47s and C-53s belonging to CNAC but chartered to the USAAF had the "Chung" character markings only and no Chinese registrations.

Douglas C-47 deliveries started in October 1942 and 14 (CNAC No 60 to 73) were received until April 1943. The C-47A started to arrive in June 1943 and by July 1944 about 25 had been delivered (CNAC No 74 to 98). Aircraft were lost continuously in accidents, however. By May 1943 CNAC operated 20 C-47s and C-53s between Dinjan and Kunming under contract with the US Army and two aircraft on the route Calcutta-Chungking. By November the same year the airline's fleet still comprised the same total number of DC-3s, C-47s, C-47As and C-53s. Between October 1944 and January 1945 a large number of flights were made to Paoshan and Myitkyina on the Burma Road and on 28 March 1945 the Lanchow route was extended to Hami.

C-47A No 112 was delivered in December 1944 and during the same month the first two Curtiss C-46 Commandos arrived. During the first eight months of 1945 CNAC received 21 C-46s. The company bought six C-47s and three C-53s from the USAAF in June 1945 and finally had over 50 C-46s, C-47s and C-53s in service. The American Government paid all costs and all pilots and mechanics were American. An average of only four aircraft was used for "normal" traffic, however, while the rest served in a semi-military transport role. CNAC headquarters moved to Shanghai at the end of 1945.



The Hump

The fall of Rangoon to the Japanese in March 1942 cut off the Burma Road supply line to China and as an emergency measure an air transport route between India and Yünnan was established. It was to be operated in co-operation by CNAC and the USAAF.

The route went from Dinjan, near Sadiya, a railhead in Upper Assam in India, and later other airfields in that area, across the High Himalayas to Yünnanyi, Kunming. The distance was about 500 miles (800 km). Goods were brought to India by boat (and by air) and then by railway from Karachi, Calcutta and Bombay to the Assam airfields.

The recapture of Myitkyina in Northern Burma in May 1944 made possible a more southerly, lower altitude course over the "Hump" and additional airfields were made available at Kunming to cope with the congestion there. By spring 1945 an average of about 330 American and Chinese aircraft were assigned to the "Hump" route.

A grand total of some 650,000 tons of fuel, munitions and other freight, and men were transported into China over the "Hump" route in 1942-45.

CNAC Fleet List 1929-1945

No	Name	Type	C/n	Received	Notes
1	Shasi	Loening C-2-H Air Yacht	238	24.9.29	Sold as junk 20.5.41
2	Anking	Loening C-2-H Air Yacht	239	4.10.29	Sold as junk 20.5.41
3	Hankow	Loening C-2-H Air Yacht	240	4.10.29	Cr 11.8.31
4	Kiukiang	Loening C-2-H Air Yacht	241	22.10.29	Sunk 25.9.37
5	Wuchang	Loening C-2-H Air Yacht	242	1.11.29	Left when Hankow evacuated 1.38
6	Chungking	Loening C-2-H Air Yacht	220	18.9.30	Ex US Reg 9773. Sold as junk 20.5.41
7	Ch'angchow	Stinson SM-1F Detroiter	509*	8.30	Ex Min of Communications. Destr by Japanese 14.1.41
8	Peiping	Stinson SM-1F Detroiter	510*	8.30	Ex Ministry of Communications. Dbf 27.1.40
9	Tientsin	Stinson SM-1F Detroiter	511*	8.30	Ex Ministry of Communications. Dbf 27.1.40
10	Tsinan	Stinson SM-1F Detroiter	512*	8.30	Ex Ministry of Communications. Burnt 19.11.31
11	Hsuchow	Stinson SM-1F Detroiter		8.30	Ex Min of Comm. Destr by Japanese 5.11.39
12	Pengpu	Stinson SM-1F Detroiter		8.30	Ex Ministry of Communications. Burnt 27.1.40
14	Ichang	Keystone-Loen. Air Yacht		3.8.31	Wfu 3.35, scrapped
15	Wanhsien	Keystone-Loen. Air Yacht		7.8.31	Burnt 12.12.32 (C-4-C or K-85)
16	Chengtu	Keystone-Loen. Air Yacht	299*	30.3.33	Cr 18.5.35. *C-4-C Ex US Reg 10588
17		Sikorsky S-38BH	314-20	7.33	Ex NC16V. Cr 24.11.33
18		Sikorsky S-38BH	414-8	7.33	Ex NC17V. Cr 10.4.34
19		Sikorsky S-38B	514-4	.33	Ex NC40V. Destroyed in a storm 13.8.35
20	Lunghwa	Stearman		1.35	To Central University .40
21	Kwangtung	Douglas Dolphin	1348	.34	Ex NC14239. Destr by Japanese 8.37
22	Fukien	Douglas Dolphin	1349	.34	Ex NC14240
23	Kunming	Ford Tri-Motor	5-AT-115	5.3.35	Ex NC9658. Cr 5.3.36
24	Nanking	Douglas DC-2	1369	1.4.35	Ex NC14297. Destr by Japanese 8.12.41
25	Hankow	Ford Tri-Motor	5-AT-116	1.9.35	Ex NC9659. Dbf 31.3.36
26	Chengtu	Douglas DC-2	1302	1.10.35	Ex NC14269. Destr by Japanese 8.12.41
27	Shanghai	Ford Tri-Motor	5-AT-101	15.11.35	Ex NC15551. Destr 11.37
28	Szechwan	Douglas DC-2	1600	28.6.36	Cr 25.12.36
29	Kweichow	Ford Tri-Motor		1.37	Ex-CAF probably. Damaged 18.8.37
-		Sikorsky S-43W	4320	1.37	Ex NC16929. To CAF 1.37
30	Chekiang	Sikorsky S-43W	4321	2.37	Ex NC16930. Cr 8.8.37
31	Chungshan	Douglas DC-2	1567	1.7.37	Cr 14.3.42
32	Kweilin	Douglas DC-2	1568	24.6.37	Used from 25.5.38. Destr by Japanese 24.8.38. Became 39 "Chungking" after repairs
33		Spartan		.37	Ex CAF (Spartan 7W-P1 or Spartan C4/C5)
34	Wuchow	Consolidated 16 Commod.	7	1.38	Ex US Reg 663M. Damaged 1.2.39
35	Changsha	Consolidated 16 Commod.	9	1.38	Ex US Reg 665M. Destr by Japanese 16.9.40
36	Kwangtung	Douglas DC-2	1598?	.38	Ex CAF. To CAF 1939
37		Beech D17R		1.39	Ex CAF
38		DH 89A Dragon Rapide		1.39	Ex CAF. Dbf 27.1.40
39	Chungking	Douglas DC-2	1568		Ex 32 "Kweilin". Destr by Japanese 29.10.40
40	K'angting	Douglas DC-2	1586	15.5.39	Ex NC 16048. Cr 12.2.41
41	Chiating	Douglas DC-3	2135	1.10.39	To XT-BT(A) 5.43 XT-91. To N8360C 12.49
42		Ford Tri-Motor		11.12.39	Ex CAF probably. Cr 20.1.41
43	Fuling	DH 89A Dragon Rapide	6444	25.1.40	Ex CAF. Sold at Singapore (circa 41?).
44		Vultee V-1A	23*	2.7.40	Ex CAF. To CAF
45		Vultee V-1A	26*	8.7.40	Ex CAF. To CAF
F1		Curtiss T-32C Condor		sum.40	Destr by Japanese 8.12.41
F2		Curtiss T-32C Condor		sum.40	Cr 28.10.41
F3		Curtiss T-32C Condor		sum.40	Left at HK 10.12.41 and captured by Japanese.
F4		Curtiss T-32C Condor		sum.40	Destr by Japanese 8.12.41
F5		Curtiss T-32C Condor		sum.40	Destr by Japanese 8.12.41

These aircraft were: T-32C c/n 25 (ex NC 12365/XA-BDS), T-32C c/n 40 (ex NC 12383/XA-BDV), AT-32 c/n 43 (ex NC 12391/XA-BDR), AT-32 c/n 48 (ex NC 12396/XA-BDP), AT-32 c/n 50 (ex NC 12398/XA-BDU), AT-32 c/n 51 (ex NC 12399/XA-BDT)

46	Ermei	Douglas DC-3	2148	1.41	Ex Air France. Cr 13.2.43
47		Douglas DC-3	2261	7.41	Ex NC19971. To XT-BT(B) 5.43, XT-92. To N8359C 12.49
48		Douglas C-53	4852	26.2.42	Ex USAAF 41-20082. Shot down 11.8.43
49		Douglas C-53	4853	26.2.42	Ex USAAF 41-20083. Missing 13.3.43
50		Douglas C-53	4871	12.4.42	Ex USAAF 41-20101. To XT-90. To N8367C 12.49

51	Douglas C-53	4879	12.5.42	Ex USAAF 41-20109. Cr 24.3.44
52	Douglas C-53	4902	19.5.42	Ex USAAF 41-20132. Cr 10.10.42
53	Douglas C-53	4904	25.5.42	Ex USAAF 41-20134. Missing 11.3.43
54	Douglas C-53	4927	28.5.42	Ex USAAF 42-6475. To XT-45. To N8361C 12.49
55	Douglas C-53	4929	4.6.42	Ex USAAF 42-6477. To XT-55.
56	Douglas C-53	4881	9.6.42	Ex USAAF 41-20111. Cr 12.12.44
57	Douglas C-53	4883	12.6.42	Ex USAAF 41-20113. Cr 18.2.44
58	Douglas C-53	7407	18.9.42	Ex USAAF 42-15890. Missing 7.4.43
59	Douglas C-53	7406	7.10.42	Ex USAAF 42-15889. Cr 19.11.43
60	Douglas C-47	4681	18.10.42	Ex USAAF 41-18556. Missing 17.11.42
61	Douglas C-47	4729	26.11.42	Ex USAAF 41-38626. Cr 23.10.43
62	Douglas C-47	4730	2.12.42	Ex USAAF 41-38627. To XT-82
63	Douglas C-47	6034	5.1.43	Ex USAAF 41-38651. Burned 19.11.43
64	Douglas C-47	6035	6.1.43	Ex USAAF 41-38652
65	Douglas C-47	6037	10.1.43	Ex USAAF 41-38654. To USAAF 19.1.43
66	Douglas C-47	6150	10.2.43	Ex USAAF 41-38691
67	Douglas C-47	6151	21.2.43	Ex USAAF 41-38692. To XT-87. To N8357C 12.49
68	Douglas C-47	6221	4.3.43	Ex USAAF 41-38762. To XT-88
69	Douglas C-47	6222	4.3.43	Ex USAAF 41-38763. Cr 6.10.43
70	Douglas C-47	9014	30.3.43	Ex USAAF 42-32788. Cr 14.1.45
71	Douglas C-47	9013	10.4.43	Ex USAAF 42-32787. Cr 16.6.44
72	Douglas C-47	9110	17.4.43	Ex USAAF 42-32884. Destr by Japanese 13.10.43
73	Douglas C-47	9109	20.4.43	Ex USAAF 42-32883. Lost 1.8.44
74	Douglas C-47A	9291	25.6.43	Ex USAAF 42-23429. Cr 6.1.45
75	Douglas C-47A	9416	25.6.43	Ex USAAF 42-23554. Missing 20.2.44
76	Douglas C-47A	9417	4.7.43	Ex USAAF 42-23555
77	Douglas C-47A	9596	15.7.43	Ex USAAF 42-23734. Cr 6.1.45
78	Douglas C-47A	9597	15.7.43	Ex USAAF 42-23735
79	Douglas C-47A	9760	12.8.43	Ex USAAF 42-23898. Cr 18.12.43
80	Douglas C-47A	9761	13.8.43	Ex USAAF 42-23899. Cr 13.11.44 (4.11.44?)
81	Douglas C-47A	9955	4.9.43	Ex USAAF 42-24093. Cr 15.6.45
82	Douglas C-47A	9956	5.9.43	Ex USAAF 42-24094. Missing 26.5.44
83	Douglas C-47A	10159	3.10.43	Ex USAAF 42-24297. Cr 18.12.43
84	Douglas C-47A	10158	5.10.43	Ex USAAF 42-24296. Cr 17.10.43
85	Douglas C-47A	18902	10.11.43	Ex USAAF 42-100439. Exploded 8.6.44
86	Douglas C-47A	18901	17.11.43	Ex USAAF 42-100438. Cr 11.3.44, rebuilt. To XT-86, N8358C 12.49
87	Douglas C-47A	18902	7.12.43	Ex USAAF 42-100599. Cr 6.45. To XT-51
88	Douglas C-47A	19061	14.12.43	Ex USAAF 42-100598. Cr 9.4.45
89	Douglas C-47A	19313	21.1.44	Ex USAAF 42-100850. To XT-48, N8348C 12.49
90	Douglas C-47A	19314	10.2.44	Ex USAAF 42-100851. Missing 15.5.44
91	Douglas C-47A	19453	—	Ex USAAF 42-100990. Cr during delivery 13.3.44
91	Douglas C-47A	19452	15.3.44	Ex USAAF 42-100989. To XT-54. To N8349C 12.49
92	Douglas C-47A	19620	12.4.44	Ex USAAF 43-15154. Cr 18.5.44
93	Douglas C-47A	19621	14.4.44	Ex USAAF 44-15155. Cr 16.1.45
94	Douglas C-47A	19803	3.5.44	Ex USAAF 43-15337. Cr 9.5.45
95	Douglas C-47A	19804	5.5.44	Ex USAAF 43-15338
96	Douglas C-47A	20091	13.6.44	Ex USAAF 43-15625. Cr 30.11.45
97	Douglas C-47A	20253	21.6.44	Ex USAAF 43-15787. Cr 31.8.44
-	Douglas C-47A	19929	—	Ex USAAF 43-15463. Cr 14.5.44 Miami
98	Douglas C-47A	20252	3.7.44	Ex USAAF 43-15786
99	Douglas C-47A		.44	Ex USAAF
100	Douglas C-47A		.44	Ex USAAF. To XT-T-20
101	Douglas C-47A		.44	Ex USAAF. Cr 7.10.44
102	Douglas C-47A		.44	Ex USAAF. Cr 7.1.45
103	Douglas C-47A		.44	Ex USAAF. To XT-T-83
104	Douglas C-47A		.44	Ex USAAF. Cr 20.10.45
105	Douglas C-47A		.44	Ex USAAF. Cr 16.2.45
106	Douglas C-47A		.44	Ex USAAF. Cr 25.11.44
107	Douglas C-47A		.44	Ex USAAF
108	Douglas C-47A		.44	Ex USAAF. To XT-T-58

No.s 109-112 were Douglas C-47As, No.s 113-135 were Curtiss C-46s.
* Not confirmed

Eurasia's first four aircraft included Junkers F 13 EU IV.

On 21 February 1930 a contract was signed by the Chinese Ministry of Communications and the Deutsche Luft Hansa AG (WeiDLH), calling for the formation of a joint Chinese-German air transport company. Two thirds of the company, to be named the Eurasia Aviation Corporation, was to be owned by the Ministry of Communications and one third by DLH. The company's primary purpose was to carry mail between China and Europe and to realise an old German "Transeurasia line" concept. The mail (and passengers) was to be carried from the Far East over Moscow to Berlin in co-operation with Deruluft (Moscow-Berlin), which was partly DLH-owned, and the Soviet Dobrolet company. A proving flight from Berlin to Peking with two DLH Junkers G 24s had been made already in 1926.

DLH representative Wilhelm Schmidt, who later became Eurasia's first director, was sent out to Peking in May 1928, but he soon moved to Nanking to negotiate with the new government there. In September the same year DLH sent an air service proposal to the Nanking Government. The intention was now that DLH would connect with the Chinese airline at Irkutsk in southern Siberia. On 19 November a draft agreement was presented for a Sino-German Air Traffic Company, Ltd (Chung-Te min-yung hang-k'ung yu-hsien kung-ssu). Nothing came out of this, however, and the negotiations continued until the agreement mentioned above was finally signed. It was ratified by the Nanking Government on 9 April 1930[20].

Eurasia started operations on 1 February 1931 with headquarters at 97, Jinkee Road in Shanghai. The company was to be equipped exclusively with Junkers aircraft from the start, most of which were delivered from the DLH inventory. The first four, two F 13s and two W 33s, arrived in Shanghai at the beginning of March 1931 together with four former DLH pilots, Baumgart, Luz, Rathje and Count Schack von Wittenau, and two flight mechanics[21]. The aircraft were assembled and test flown at the beginning of April and were assigned fleet numbers (Roman): EURASIA I to IV (EU I to EU IV).

Proving flights were made along the route from Shanghai, over Nanking, Tsinan, Peking and Linse to Manchouli in Manchuria. The two W 33s arrived in Peking on 15 March and one of the F 13s joined them on 1 April. The F 13 reached Manchouli on 19 April, and on 31 May Schack made the first scheduled flight between Shanghai and Pe-

20 According to other information the Nanking Government State Council ratified the contract on 14 October.
21 In 1933 pilot Baumgart was replaced by Graf zu Castell.

Eurasia Management

At a meeting held on 29 January 1931, presided over by Wang Po-chun, Minister of Communications, General Manager Wei I-fu resigned and was replaced by Shuang Ching. Four German pilots, one chief mechanic and eight other mechanics had been employed. Schmidt was Director of Operations and the other directors were Lin Tien-lan and Li Ching-ts'ung.

In May 1932 Wang Chih-yüan was appointed Director, but he was replaced by Li Ching-ts'ung in December the same year. By December 1934 Li Ching-ts'ung was still Managing Director and Richard Walter was Vice President.

List of early Eurasia pilots

Baumgart, H
Castell-Rüdenhausen, Wolf Dieter Graf zu
Kahlenberg, K
Koestner, Hans
Lutz (Luz), Walter
Menzel, K
Rathje, Hannes
Schack von Wittenau, Siegfried Graf
Schleger, R

king with an F 13s. A repair shop was set up at Nanyüan, Peking, where a 30 x 70 m hangar was hired by Eurasia, and radio stations were placed along the route.

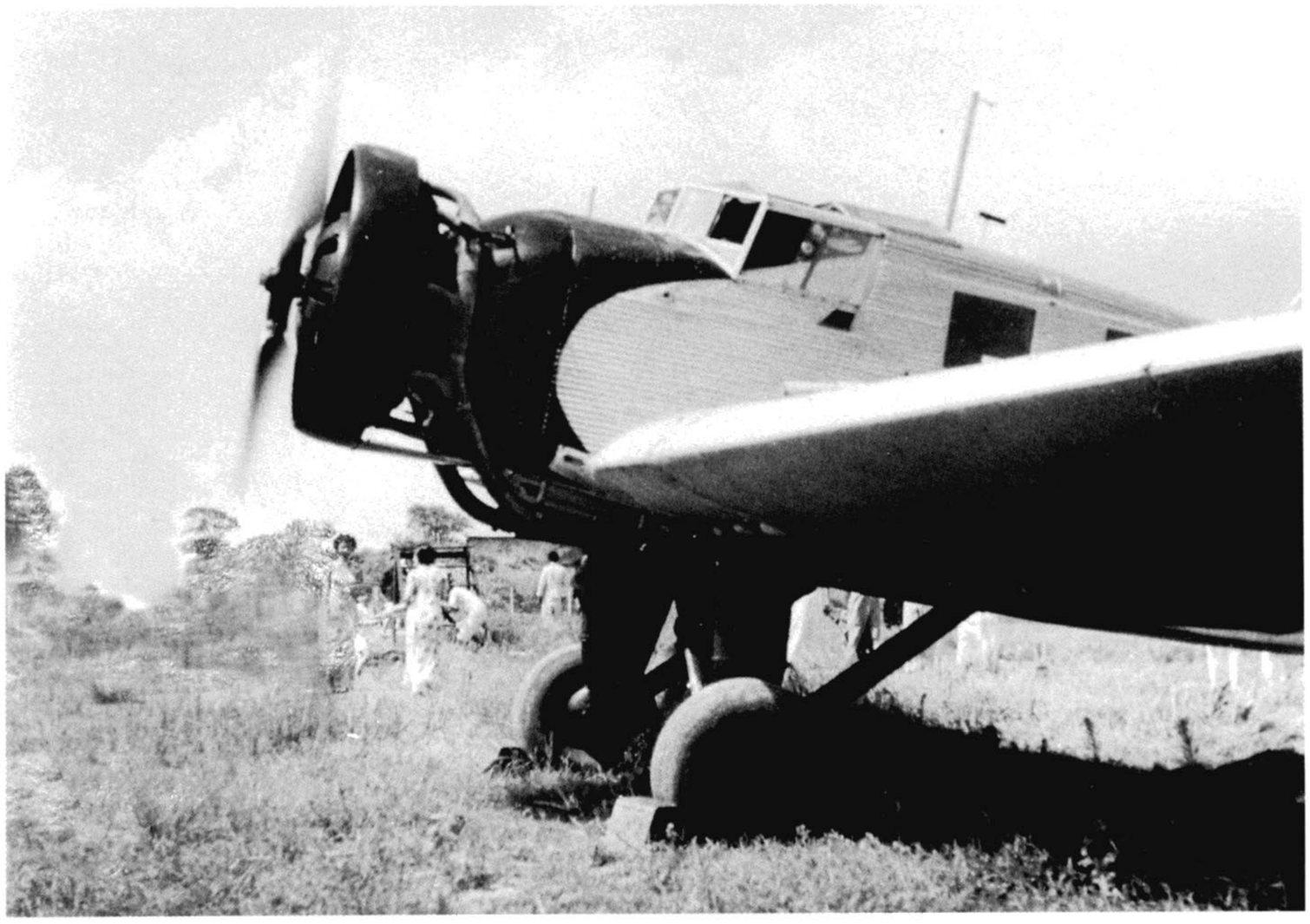
The "Mongolian Incident"

Three of the aircraft soon had to be written off due to accidents and replacements in the form of four W 33s were delivered from Europe. EU II, one of the original W 33s, was lost in connection with the so-called "Mongolian Incident" in 1931. The pilot, Johannes Rathje, had taken off with flight engineer Otto Kölber from Linse on the morning of 2 July 1931, bound for Manchouli. Flying out over the vast uninhabited steppe of eastern Mongolia they kept an altitude of about 200 m due to low clouds. Suddenly their aircraft was hit by rifle-fire just as they passed a camp of the Mongolian Border Guard. Kölber was seriously wounded in his leg and Rathje decided to land immediately on the shore of the Baile Lulu Lake. The two Germans were arrested by Mongolian troops and transported to the nearest settlement. They were accused of espionage and were subjected to severe interrogations.

The Chinese authorities at Nanking stated that Mongolia was part of China and consequently no special permission was required for flying there. The Mongolian Government at Ulan Bator thought otherwise - they had in fact been shooting warning shots at every Eurasia aircraft passing over their territory! Kölber was unable to get appropriate medi-

Landing mishap with Junkers F 13 EU IV. This photo shows to advantage how civil aircraft were marked in China. The writing on the wings is the company's name and the aircraft's number, and on the fuselage is the "Yu" character for "Post".

Eurasia's Junkers W 34 EU VI arrived in May 1935.



cal care in time and eventually had to have his leg amputated under primitive conditions. Thanks to intensive German diplomatic action the two men were finally released and were able to return after two-and-a-half months in Mongolia[22]. The aircraft was eventually written off in 1934 after several unsuccessful attempts to get it back. According to a Mongolian court ruling of 6 August 1931 it was confiscated and handed over to the Mongolian Air Force. On the following day it was flown by a Russian pilot to Urga.

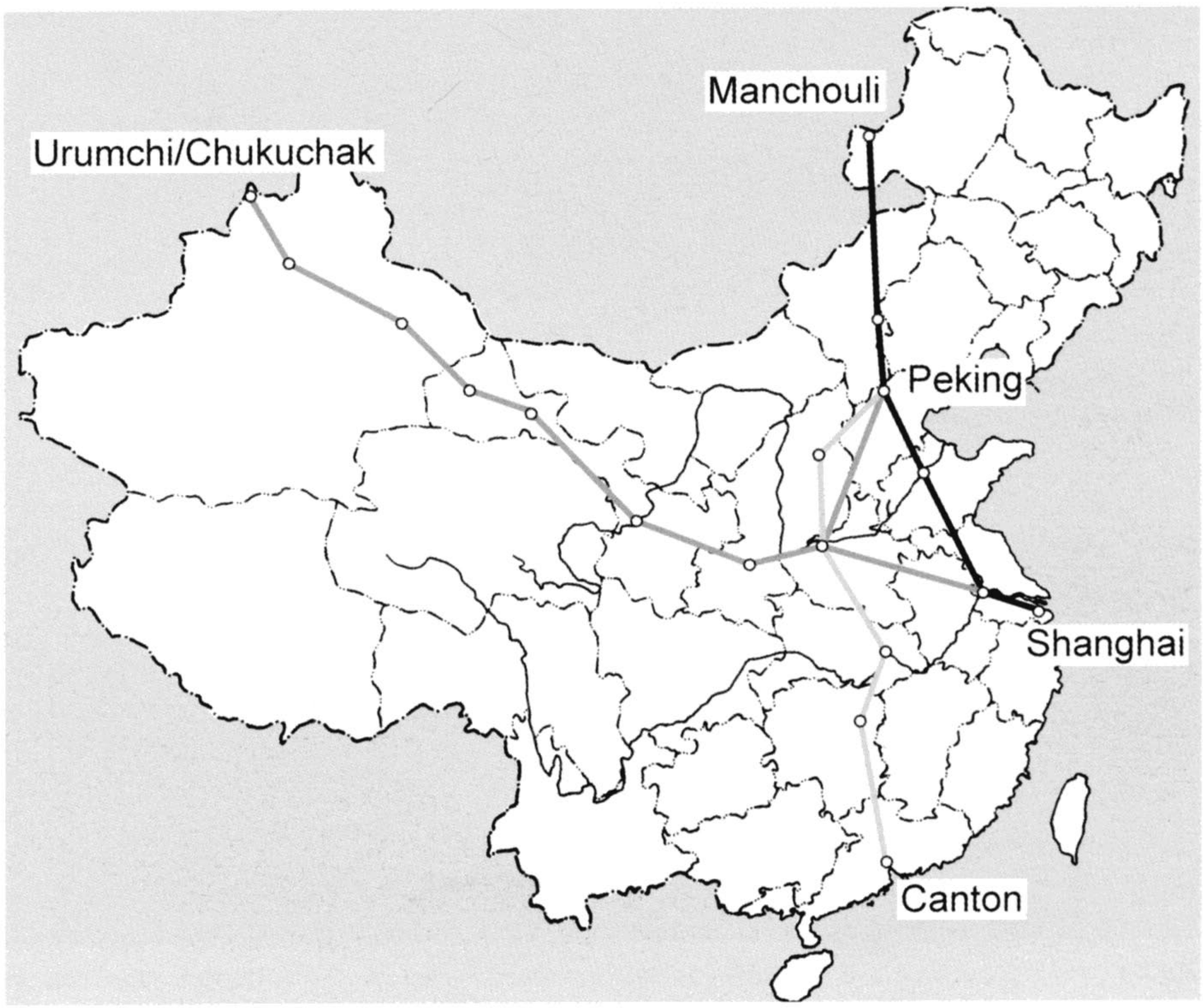
The "Mongolian Incident" and the Japanese attack on Manchuria in September 1931 put and end to the northern part of the Shanghai-Manchouli route and on 1 November the Shanghai-Peking sector was closed as well for the winter. In August Eurasia flew short sightseeing trips from Peking and there was also a temporary service to Peitaiho Beach. A proving flight was made December 1931-January 1932 from Peking to Tihwa/Urumchi and Chukuchak (Tacheng) in Sinkiang in Northwest China, but this alternative to the initial route was found impracticable until more suitable aircraft were available.

Eurasia's Shanghai station was closed 29 January 1932 and moved to Loyang due to the Japanese attack on Shanghai. One of the two Eurasia buildings had been completely destroyed when the airport was bombed. After proving flights in March (Nanking-Loyang-Sian) and May (Sian-Lanchow), two new services were opened on 1 April 1932: Nanking-Loyang-Sian and Loyang-Peking. An extension from Sian to Lanchow was added on 18 May.

Two Junkers W 33s, EU V and EU VI, were received from Germany in July 1932. On 18 August EU V crashed on take off from Lanchow, but the damage could be repaired. W 33 EU I was sent on a proving flight westwards from Lanchow to Suchow, but Walter Luz had to make an emergency landing high up in the mountains surrounding the Gobi desert. Geographical and meteorological conditions along this route were to a large extent unknown at the time and Luz made a forced landing in a ravine after encountering a mountain wall blocking the path he was following up a valley at minimum altitude. Unbelievably, no one was hurt but the aircraft could not be recovered from the site. On 1 September another W 33, EU VI, crashed on take off at Lanchow and was written off.

The Shanghai-Nanking service was re-opened on 6 September 1932. On 13-16 November a successful trial flight between Lanchow and Suchow was made by Luz in EU V,

22 Rathje was initially sentenced to ten years of imprisonment. Cameras had been found on board the aircraft and when it had been developed the film showed among other things the Frontier Guard detachment's camp.



Eurasia's main route network.

Eurasia Aircraft Losses Due to Accidents 1931-35

Year	Average number of aircraft in service	Total Losses
1931	3-4	1
1932	2-3	3
1933	5-6	2
1934	6	-
1935	6-7	5

and on 21 November the aircraft continued via Urumchi to Chukuchak on the Soviet border, where it arrived on the 24th. The route was opened as far as Urumchi on 15 December. On the same day F 13 EU III crashed in Shanghai and was completely destroyed. Graf Schack had attempted to take off with white frost on the wings. He collided with an obstacle at the airport boundary and crashed into the ground, fortunately without any injuries to the crew.

More Powerful Aircraft

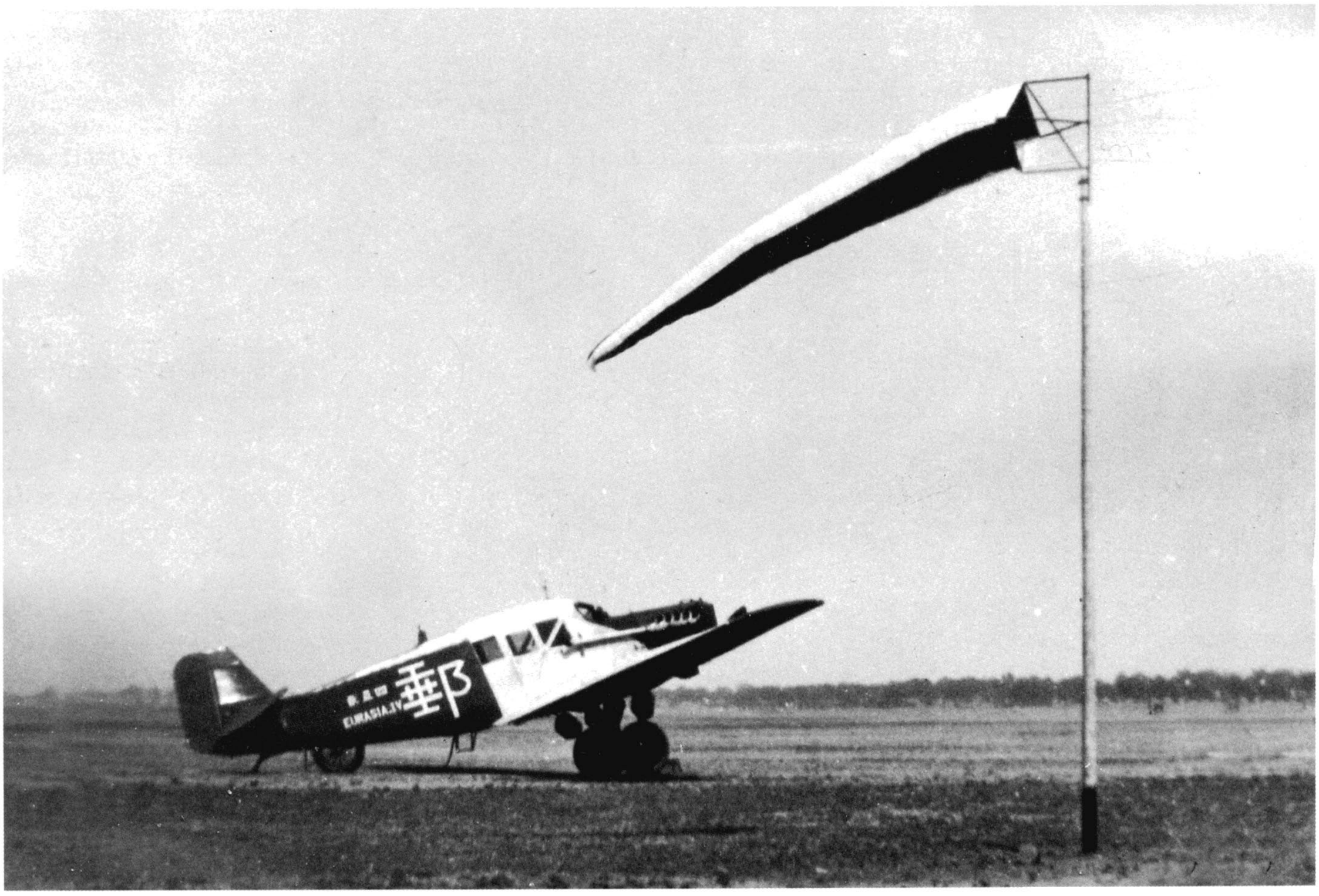
As already evident crashes and accidents were very frequent. W 33 EU V crashed on 1 February 1933 at Sian and as it could not be repaired in China it was later returned to Germany. Only one single aircraft, F 13 EU IV, now remained out of the six sent out in 1931-32!

Two W 33s, EU VII and EU VIII, arrived as replacements

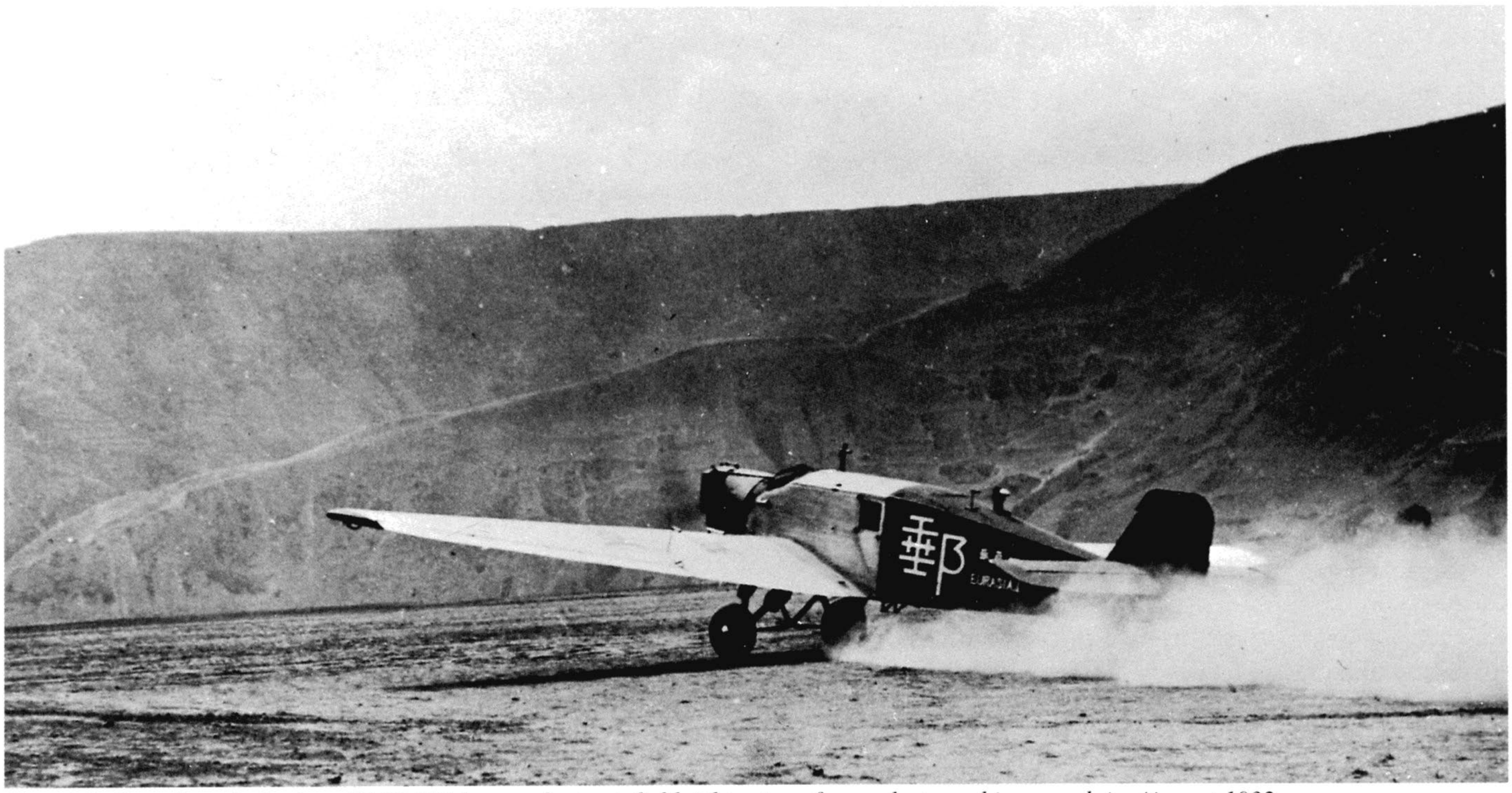
A Buddhist monk with a Eurasia Junkers W 34.

in February and March 1933, however, but the 310 hp Junkers L 5 engine of the W 33 had been found insufficient for Chinese conditions. The Junkers W 34 was fitted with a more powerful BMW-built Hornet radial and enclosed cockpit and seemed better adapted to flying in the mountainous regions of north-western China so three such aircraft were ordered new from Germany.

The delivery of these aircraft was arranged as an exploration flight across the Gobi Desert. Walter Luz and



Junkers F 13 EU IV entered service in 1931 and was destroyed by a Japanese air attack in August 1937.



Eurasia's first aircraft, Junkers W 33 EU I, on a dusty airfield. This aircraft was destroyed in a crash in Aiugust 1932.

DLH Captains Polte and Wende started to plan the flight in January 1933. Two long-distance flights were made as part of the preparations, one to Athens and back and the other to Rome. On 29 April disaster struck when Wende, Eurasia Director Schmidt and mechanic Eichentopf crashed with W 34 D-4 at Traunstein in Bavaria and were all killed.

The two remaining aircraft took off from Berlin on 31 May. They flew via Moscow, Omsk and Sergiopol and then over the Gobi to Lanchow, about 10 000 km in all. Luz and Polte were met by Baumgart and Rathje at Suchow and later continued to Nanking and then Shanghai, where they arrived on 10 June. The W 34s were taken on charge as EU I and EU II (fleet numbers were reused by Eurasia). A third W 34, EU III, was delivered by DLH pilot Gerstenkorn in September.

What had now become Eurasia's main route ran from Shanghai and Peking, via Loyang, Sian, Lanchow, Suchow, Ansi, Hami and Urumchi to Chukuchak on the Soviet border. On 6 April 1933 EU VII was held up at Suchow on its way to Tihwa because of a local revolt and due to the disturbed conditions in Sinkiang Eurasia temporarily abandoned its flights there. It was instead decided to try a Hankow-Changsha-Canton route and a first return flight was made along this route on 5 to 10 May. The Soviet-supported uprising in Sinkiang finally forced Eurasia to suspend the Lanchow-Chukuchak sector on 22 September 1933 and the attempts to connect China with Europe had to be given up for the time being. Instead, Eurasia started developing internal Chinese routes.

In March Eurasia's Peking station was closed temporarily because of Japanese threat from Manchuria and the main repair shop was moved to Shanghai, first to Hungjao and later to Lunghua. A large hangar accommodating several aircraft was erected there in June 1936. At the same time airway facilities were improved. Earlier only long-wave transmitters had been used for communication and to these were now added short-wave radios in both aircraft and ground stations, which made it more difficult for the Japanese to intercept and jam radio traffic.

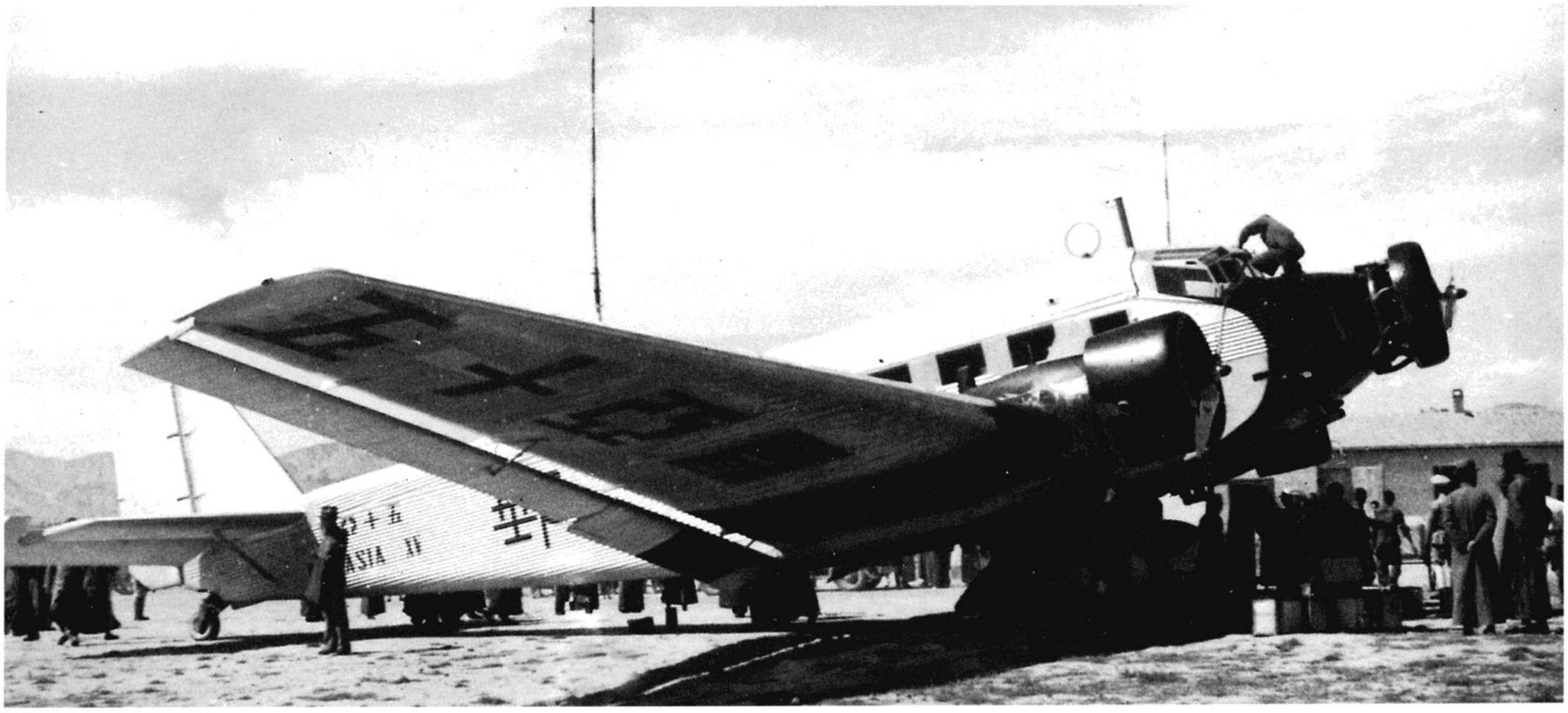
Several trial flights from Sian over Hankow to Canton were made and on 1 May 1934 a Peking-Taiyüan-Loyang-Hankow-Changsha-Canton service was opened. A Lanchow-Ninghsia branch was flown for the first time on 15 May and was opened for scheduled traffic on 20 June.

Eurasia now had five pilots and seven flight mechanics, including three Chinese. On 15 October 1934 the Peking-Canton line was changed to run over Chengchow instead of Loyang-Taiyüan, and the Lanchow-Ningshia branch was extended to Paotow/Suiyuan on 1 November.

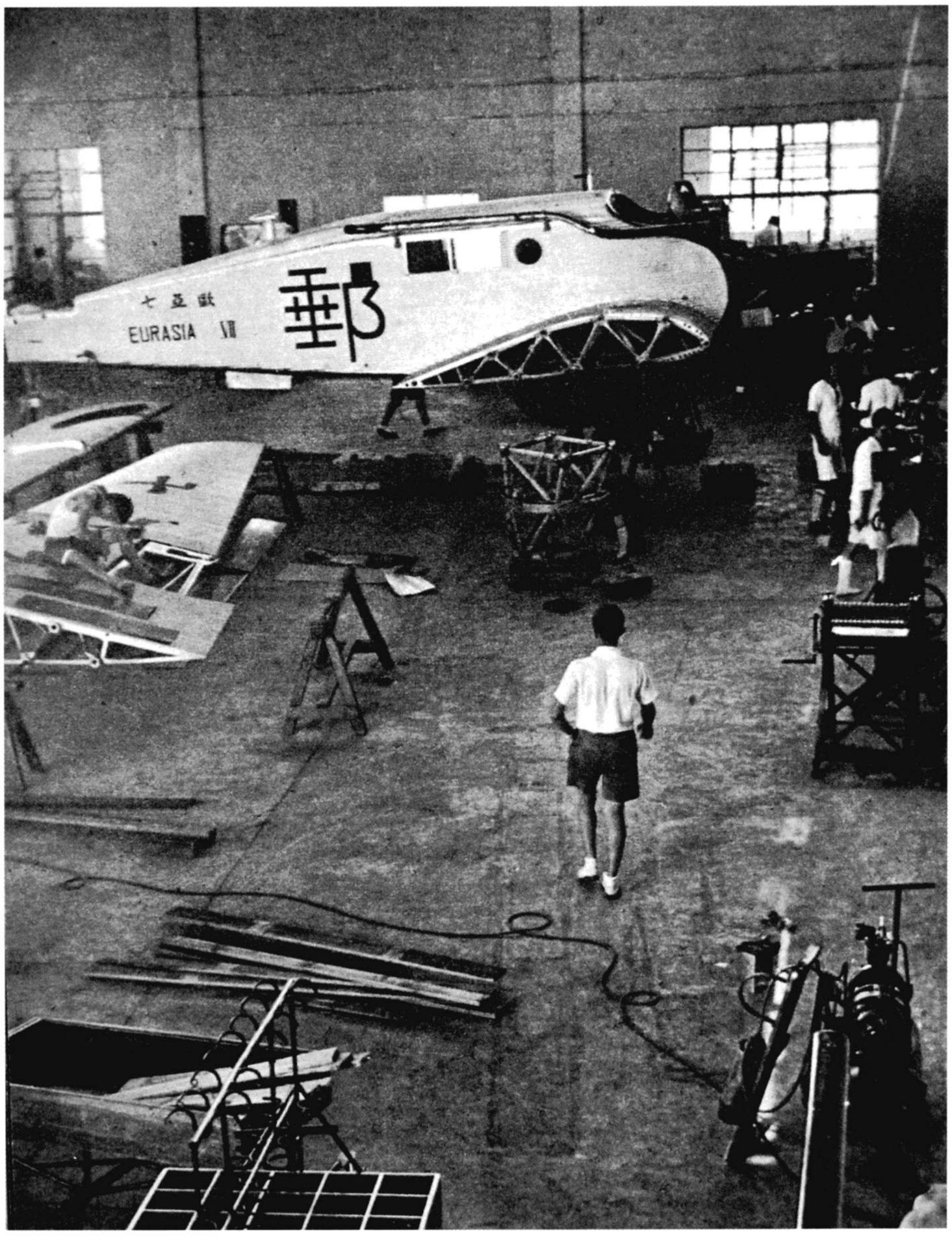
The accidents continued. On 22 February 1935 W 34 EU III, flown by K Kahlenberg, crashed while attempting to land in the vicinity of Changsha and was completely destroyed. Although several crashes had occurred before, this was, in fact, Eurasia's first fatal accident in China. The frequent crashes were perhaps significant for the conditions prevailing in China and DLH apparently considered China

Radio stations

Radio stations were operated by Eurasia at Shanghai, Nanking, Chengchow, Kwanyintong, Sian, Fenziang, Hanchung, Lanchow, Hsinning, Suchow, Ansi, Ninghsia, Paotow, Chengtu, Niping, Kwanhang, Kwanyuen, Kunming, Sheinwei, Peiping, Hankow and Taiyüan.



Junkers Ju 52/3m EU XV, Eurasia's first example of this type, was delivered to the company in 1935.



A proving flight between Sian and Chengtu was made on 24 September 1935 and this route was inaugurated on the following day (extension to Kunming opened on 1 April 1936). Night flying equipment was been installed at Shanghai airport and flying by night was later to become the only way to reach some of CNAC's destinations due to the threat of Japanese attacks. In January 1936 Ju 160 EU XVI crashed at Shanghai. It could not be repaired in China and was later returned to Germany. Eurasia's third and fourth Ju 52/3ms, EU XVIII and EU XIX, were delivered and put in service in July 1936 and they were followed by EU XX in March 1937 and EU XXI in May the same year.

War

On 29 June 1937 the whole new route from Peking to Canton and Hong Kong[23] could be re-opened and Eurasia now had six pilots, one F 13, two W 33s, two W 34s and six Ju 52/3ms at its disposal. The company had been forced by political circumstances to change its network constantly, and this had not happened for

The Eurasia repair workshop. Junkers W 33 EU VII needed repair and due to lack of spare parts it remained in the workshop from 1937 until destroyed by Japanese bombs in December 1941.

the last time. In 1937 the whole route system had to be completely altered because of the Japanese attack on China. Soon after the outbreak of the conflict on 7 July the company was ordered by the Ministry of Communications to move its headquarters and main repair shop from Shanghai to Sian and on 26 July 1937 the Peking station was closed due to Japanese artillery bombardment.

On 1 August EU XVIII, flown by Herzog, developed engine trouble, crashed at Kunming and was completely destroyed. W 34 EU II and Ju 52/3m EU XVII were damaged by Japanese bombs in Nanking on 17 August. The evacuation of Lunghua was completed on 17 August, but F 13 EU IV and W 33 EU VIII, which were under repair, could not be moved and had to be left behind in the workshops[24]. The first bombs had hit that aerodrome two days earlier.

On 21 August, Shanghai, Nanking, Chengchow, Taiyüan and Canton were closed due to bombardment and instead a new Sian-Hankow-Changsha-Hong Kong service was opened. W 33 EU VII and W 34 EU VI went unserviceable due to war damage and were sent to Hong Kong for repairs but were destined never to fly again.

In October the main repair shops started moving from Sian to Kunming due to the Japanese advances, but it took about a whole year until everything had been transferred. The Kunming aerodrome had to be improved and a new headquarters was set up in the former airport building. The repair shop moved 6 km outside the city in September 1940 to avoid Japanese bombing and in addition Eurasia operated a sailplane factory (See under Gliders and Sailplanes in China).

A Kunming-Chungking-Hankow service had been opened, but after the fall of Hankow in October this was changed to Kunming-Chungking-Kweilin-Hong Kong - the last sector being flown only at night because of the treat of being attacked by Japanese aircraft. In November the Lanchow, Ningshia and Paotow stations had to close. In order to secure a new international connection a proving flight from Kunming to Hanoi was made on 16-18 December 1937 and this route opened on 23 December.

The five Ju 52/3ms that Eurasia was operating had been used on charter contracts, but on 10 August 1937 the company purchased them. At the same time the last six of 22 chartered BMW 132 engines were purchased. There were six German crews: Lutz/Fischer, Rathje/Rammelt, Leiding/Sasse, Herzog/Schwitters, Menzel/Stichnote and Cyrus/Springweiler. Three Chinese pilots, Ling Ching-tai, Ho and Young, had been sent to Germany for training in 1936 and returned at the end of 1937 and another two, Ling T K and Lue, went to Germany for training in 1938 and returned in 1939[25]. The Germans flew with two-man crews, but the Chinese Ju 52/3m crews consisted of pilot, flight mechanic

23 Over Taiyüan, Chengchow, Hankow and Changsha.
24 Both aircraft were soon destroyed by Japanese bombs.
25 A German Junkers W 33, registered D-OXER, which crashed on 17 September 1936 at the Stettin Flying School, was piloted by Chen Feng-chi from Shanghai, who was training in Germany.

Eurasia's Junkers W 34 being loaded with an unusual cargo.

and wireless operator. In addition, the company had three former CAF pilot, Liu, Li and Yen, who only flew the W 34.

Ju 52/3m EU XX was bombed at Chou Chia Kow, a military aerodrome 340 km north of Hankow, on 22 January 1938 and was out of service for more than a year. It was sent by railway to Hong Kong where a new repair shop was set up in April. Due to the frequent Japanese bombing of Kunming all major repairs and overhauls were being moved to Hong Kong. In March a new Ju 52/3m, EU XXII, arrived in China. The increase of the Eurasia inventory was short-lived, however, because on 16 July 1938 EU XXI crashed when pilot Ho attempted to land in strong cross winds at Hankow. EU XXIII, an old and well-used DLH Ju 52/3m, was taken on charge as a replacement in September.

The first attacks by Japanese fighters on flying Eurasia aircraft occurred in September 1938. EU XV was fired on by three Japanese fighters while flying over Fukiang near Hong Kong on 5 September but got away with only slight damage. After landing at Liuchow pilot W Lutz discovered ten bullet holes in the fuselage and wings. Fortunately none of those on board, the crew of two and seven passengers, including Eurasia General Manager D D La, mechanic Schumann, technical adviser K Holtz and Chinese pilot KT Ling, had been hurt.

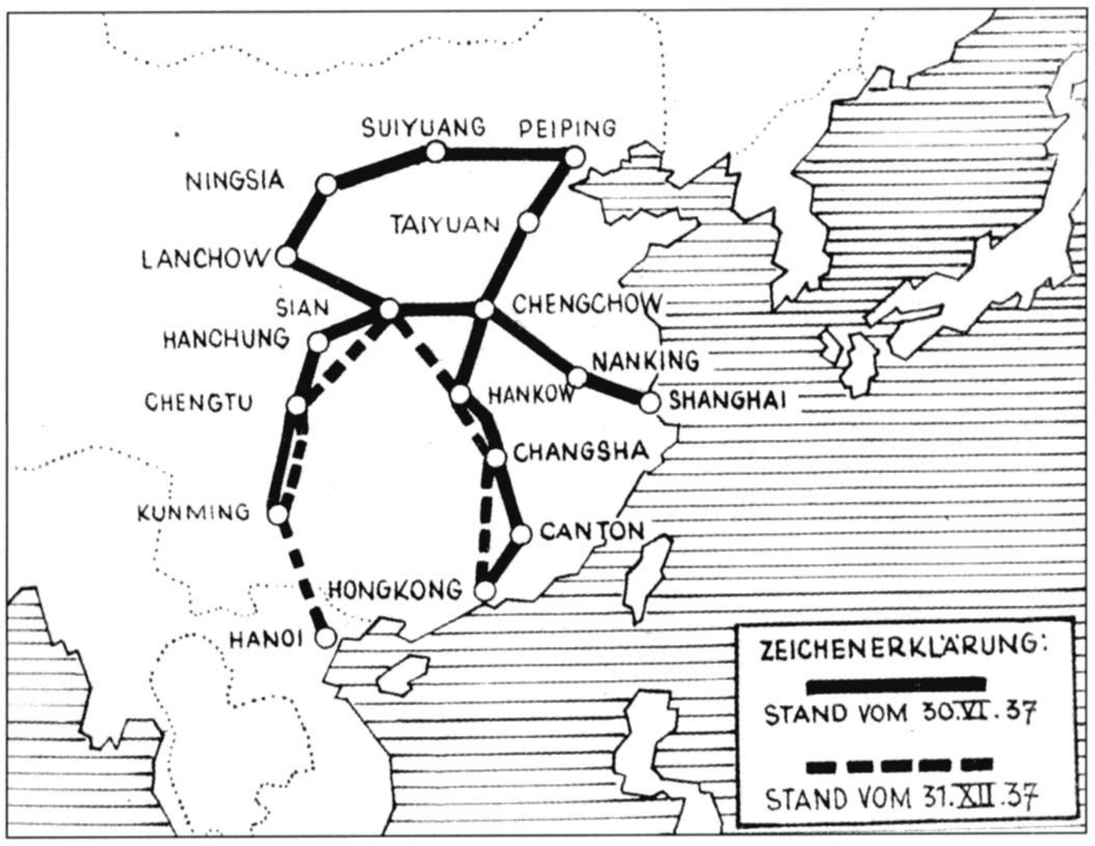
EU XVII was put out of service for six months by another fighter attack on 6 September 1938. The Japanese made no exceptions for civil aircraft and shot at anything flying in Chinese skies. This time three fighters discovered the Eurasia aircraft near Hankow as it took off to avoid being bombed at the airport. They chased the plane and finally shot it down at Wuchang, 40 miles south-west of the city. There was a crew of three on board, including Chinese pilot Ho, but no passengers. A forced landing was made on the left bank of the Yangtse with about 100 bullet holes in the aircraft. Miraculously those on board were unhurt this time as well.

By the end of 1938 Eurasia had three German pilots and eight Chinese, one W 33, one W 34 and six Ju 52/3ms. The company's staff consisted of a total of 10 Germans and 304 Chinese.

Take-Off From a Mountainside

On 13 April 1939 EU XIX was forced to land on a mountainside after being machine-gunned by three Japanese bombers while en route from Hanoi to Kunming. It was attacked immediately after it crossed the border between Indochina and Yünnan. Pilot Rathje attempted to escape into a small cloud but got within machine gun range. He finally made a forced landing on a deep slope at Maupingchen, one mile inside the border. Eight bombs were dropped and Rathje slipped when scrambling from the aircraft to take cover and was injured. Only four bullets had hit the aircraft.

The crew marched for five days through the jungle carrying Rathje before reaching civilisation again. An expedition was later sent out to try and recover the precious aircraft and a large number of Chinese workers were



In the second half of 1937 Eurasia had to drastically reduce its route network due to the war with Japan. Routes on 30 June and 31 December 1937.

engaged to level out the mountainside and build an auxiliary airstrip. The Ju 52/3m needed 300 metres of runway to get airborne at the actual altitude (1,200 m) and the strip was only 325 m. It was so narrow that the left wingtip was only one or two metres away from the mountain wall when the right wheel was close to the outer edge of the runway. A take-off attempt made on 15 October 1939 was successful, however, although the centre engine stopped for a few seconds at the most critical moment, and the aircraft was flown to Kunming for repairs. Another write-off from Eurasia's gradually diminishing fleet had thus been avoided.

On 20 February monthly flights started from Sian to Hami, connecting with Hamiata. For these flights, which were made under the cover name ATCMOK (Air Transportation Company, Ministry of Communications), Ju 52/3m EU XXIII was named "Chiao T'ung 1" (Communication 1). On 12 March this aircraft crashed

Eurasia Route Changes 1938-39

- Sian-Hankow-Changsha-Hong Kong
- Sian-Chengtu-Kunming-Hanoi
- Kunming-Liuchow-Hong Kong opened on 13 June 1938, closed again ten days later due to British protests.
- Hankow-Changsha-Hong Kong opened in September as a night route, only to close again on 25 October.
- Kunming-Chungking-Chengtu, Kunming-Kweilin-Chungking and Kweilin-Hong Kong opened September 1938. Chungking-Chengtu closed January 1939, but instead Chungking-Sian was opened.
- Sian- Lanchow-Suchow-Hami, monthly flights from 20 February 1939

The Lanchow and Ningshia stations were re-opened in February 1938. Hankow station closed on 27 August because of Japanese attacks but could be opened again on 4 September after talks with the Japanese.

against a mountain at Weining, west of Kweichow, however, while pilot Ho Shou-jung was flying on instruments en route between Chungking and Kunming.

On 8 April 1939 EU XV was damaged during a surprise attack on Kunming airport and EU XVII was attacked by Japanese fighters on the ground at Hanchung on 6 May. It caught fire and was completely destroyed. One more Ju 52/3m had arrived in February and had entered service as EU XXIV. With this addition the Eurasia Ju 52/3m fleet now stood at five. W 34 EU II had been damaged in a forced landing near Lanchow, but was repairable.

Due to lack of aircraft, Eurasia's route network had to be curtailed. After June 1939 only Sian-Chengtu-Kunming-Hanoi and Kunming-Chungking-Kweilin-Hong Kong were retained and the outbreak of war in Europe on 1 September 1939 meant new troubles for Eurasia.

The Hong Kong and Hanoi routes had to be closed but the British authorities decided to allow flights with Chinese crews. Eurasia had five Chinese crews and Kweilin-Hong Kong was reopened in October. At the beginning of December 1939 the first night flight by a Chinese crew was performed by Ling Ching-tai. Lanchow-Liangchow-Suchow-Hami was opened on 10 November and several other routing changes were made. The Sian station was closed.

Due to the complicated political situation the supply of spare parts from Germany was cut off. The last spare parts and material sent by sea arrived in June 1939. Seventeen BMW 132 engines had been delivered in 1937 to 1939, but during the same period 14 engines had been lost. Around July 1939 Eurasia signed a contract for four Focke-Wulf Fw 200 Condor four-engine airliners to be delivered in February and August 1940, but these aircraft were destined never to arrive in China.

Eurasia Statistics

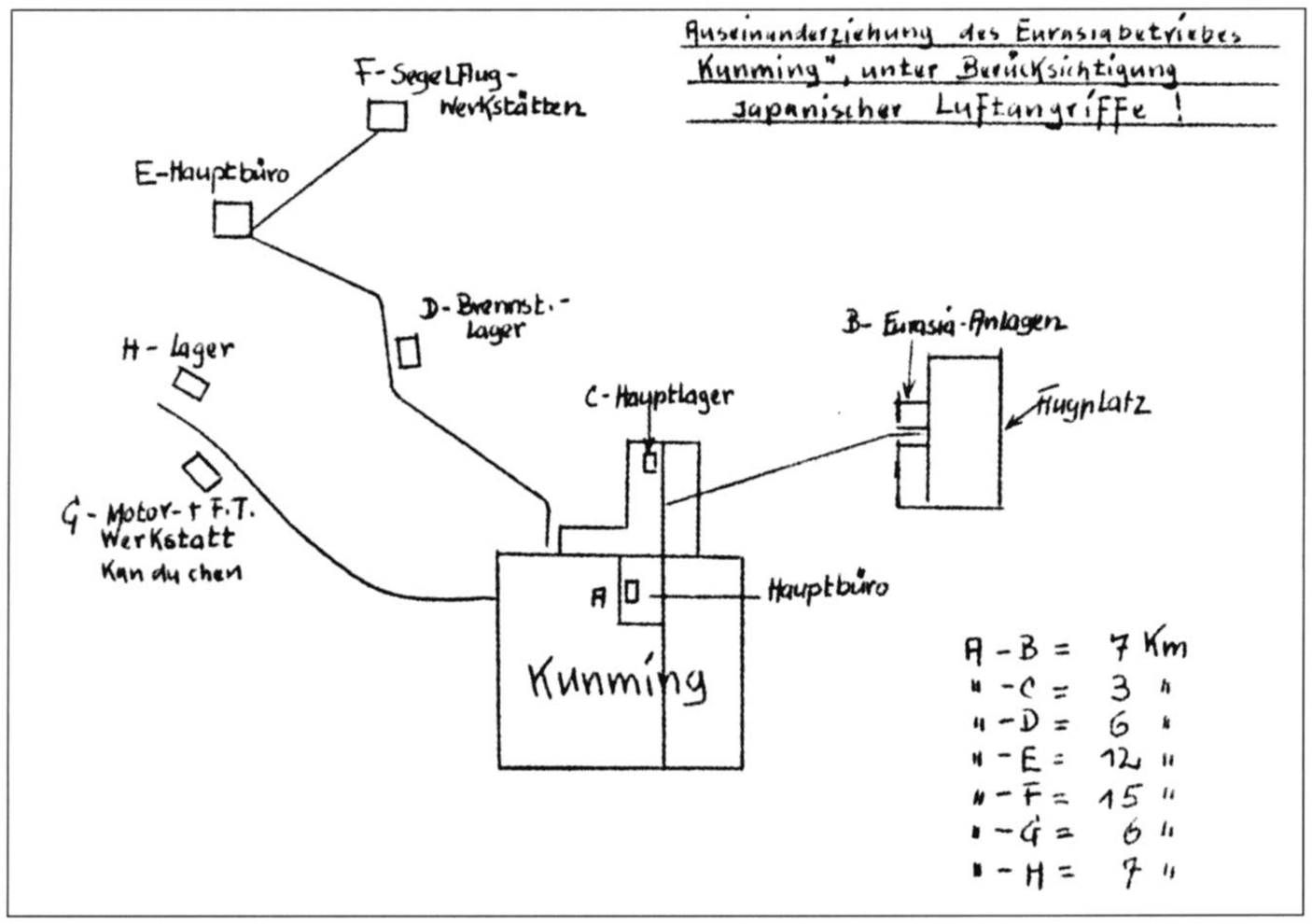
Year	Km flown	Passengers	Freight (kg)	Mail (kg)
1932	245,680	246	1,282	1,410
1933	(377,350)	(720)	(6,400)	(2,300)
1934	510,850	1,075	15,269	3,355
1935	638,847	2,513	11,773	5,426
1936	911,315	5,618	221,934	29,205
1937	1,282,497	9,215	336,614	40,724
1938	1,420,452	13,067	383,589	173,619
1939	919,687	11,555	313,301	107,591
1940	1,192,364	11,048	613,703	132,953
1941		6,477	502,045	103,047
1942		3,986	51,065	44,860

Note: Compiled from different sources.

The last aircraft received from Germany was an ex-DLH Ju 52/3m, which was chartered and taken over on 15 October 1940 as EU XXV. It was lost before it could be put into service, however. Attacked by three Japanese fighters, Flugkapitän Lutz had to make a forced landing on a rice field near Kunming on 26 October. The aircraft, which had been hit several times in the air, was strafed on the ground and finally caught fire. On 30 December 1940 another Ju 52/3m, EU XX, was destroyed on the ground by Japanese fighters at Chengtu.

The Eurasia contract expired on 20 February 1940. After negotiations it was prolonged for one year first, and then again in 1941 for another two years, until February 1943.

EU XVIII. This Ju 52/3m was shortlived in China. It was taken in service in January 1936 and was written off after a crash in August 1937.



Dispersal of the Eurasia facilities at Kunming as a precaution against Japanese air raids.
Flugplatz - Airport
A Head Office, B Eurasia Facilities, C Main Stores, D Fuel Store, E Head Office, F Sailplane Workshops, G Engine and Wireless Repair Shop, H Store.

Eurasia formed an air transport command under the Chinese Government from 18 April 1940. The Hanoi route could be re-opened on 27 June 1940 after the German armistice with France, but it had to close again when the Japanese Army captured Hanoi on 26 September. Eurasia now operated the following three routes:

Chungking-Kunming
Chungking-Chengtu-Lanchow-Suchow-Hami
Hong Kong-Kweilin-Chungking

At the end of 1940 only one of four remaining Ju 52/3ms was serviceable! The company still employed two German pilots, four German advisers, and 465 Chinese, of which nine were pilots, seven flight mechanics and seven wireless operators. In April 1941 the last German crews were taken off duty. The company's five Chinese crews had in fact flown all routes since October 1940. Pilots Lutz and Rathje went home to Germany, and Ulbricht, the last wireless operator, was transferred to ground duty.

On 2 July 1941 China severed diplomatic relations with Germany and on 1 August the Eurasia contract was declared suspended and all Germans were ordered out of the country. From now on the Ministry of Communications operated Eurasia alone through Li Ching-ts'ung , managing director since December 1932, and by September 1941 all Germans, with the exception of two, had left China. Previously, two thirds of the company had been owned by the Chinese Ministry of Communications and there had been six Chinese and three German DLH directors on the board. On 1 December 1941 all German interests were confiscated.

A new route was added to the network on 22 June 1941, when the branch Chengtu-Yaan was opened with W 34 EU

A total of ten Junkers Ju 52/3m transports were acquired by DLH between 1935 and 1940 for use by Eurasia. EU XVII arrived in 1935.

II. It was closed again less than a month later after EU II had been attacked on the ground and damaged by Japanese aircraft at Chengtu. From 29 August Eurasia Ju 52/3ms were used to transport wolfram and zinc from Nanhsiung to Hong Kong.

The Japanese attack on Pearl Harbor in December 1941 and the escalation of the war was to have disastrous effects on Eurasia's remaining Junkers fleet. Hong Kong was bombed on 8 December and four out of seven Eurasia aircraft were lost overnight[26]. When Ju 52/3m EU XV was destroyed on the ground at Kweilin a few days later, Ju 52/3m EU IXX and W 34 EU II became the only surviving Eurasia aircraft! All supplies in Hong Kong were lost. The Hong Kong route was curtailed at Kweilin and Eurasia dismissed more than 270 of its staff.

By June 1942 the W 34 was damaged and only the Ju 52/3m was serviceable, but there were nine spare engines. Five crews had been retained to work in turns and four routes were operated by this single aircraft, presumably not very frequently: Chungking-Lanchow-Suchow-Hami, Chungking-Kunming, Chungking-Kweilin and Chungking-Chengtu.

A unique photo of EU XXIV (24) with the type of registration that was introduced in 1940: XT-AGE.

CATC

Eurasia was made bankrupt at a meeting on 26 February 1943 and was formally liquidated on 1 June. Even if attempts had been made, Eurasia's German, or ex-German image had made it difficult to obtain any new equipment from the USA. However, on 3 March 1943 a "new" company, the Central Air Transport Corporation (Chang-yang hang-k'ung yün-shu ku-fen hu-hsien kung-ssu), or CATC, was formed by the Ministry of Communications to take over the assets and aircraft of Eurasia. Former Eurasia manager, Li Ching-ts'ung was too much associated with the old company and was replaced. W 34 EU II was taken over by the CAF and Ju 52/3m EU IXX became the first aircraft in

26 W 34 EU VI, W 33 EU VII, and Ju 52/3ms EU XXII and EU XXIV were destroyed at Hong Kong on 8 December. EU VI and EU VII had been stored there since 1937 due to lack of spare parts.

Junkers Ju 52/3m EU XVII was attacked and destrpyed by the Japanese on 6 May 1939.

the new company's fleet. It was registered XT-ATA in May 1943.

The reorganisation was intended to improve the chances of being allowed to acquire much needed new aircraft from the USA, but CATC only managed to obtain old aircraft retired by the CAF. It took over four military aircraft of different types, formally on 25 June 1943: a captured en re-engined Nakajima AT (Ki.34), a Heinkel He 111A and two Vultee V-1s, which received fleet numbers Chung-1 to Chung-4. The Ju 52/3m became Chung-5. No regular services could be maintained and by the end of the year CATC was near bankruptcy again. In August its serviceable aircraft fleet had consisted of the old Ju 52/3m and the Nakajima AT and from about 1 January 1944 the Ju 52/3m went unserviceable.

Eurasia in 1943

At the beginning of 1943 the company had a total of seven pilots, five co-pilots, nine radio operators, eleven senior mechanics, three junior mechanics, 29 ground mechanics, 17 radio engineers and 33 ground radio operators, but just a single Ju 52/3m, with very few spare parts. Some Eurasia pilots had been ordered to serve as blind flying instructors in the CAF. A total of 24 radio stations were maintained.

The Heinkel He 111 bomber was taken out of storage at Chengtu in December 1943 and flown to Kunming, where the CATC shops overhauled and modified it into a transport for 10 passengers and fitted it with Wright R-1820 Cyclone engines. The Nakajima Ki.34 remained at Kweilin and during the spring of 1943 there was almost no flying at all.

On 26 June 1944 ten Lockheed A-29 Hudsons were transferred from the CAF to be used as transports and these were gradually put in service. On 8 September the old ex-Eurasia Junkers W 34 was returned to CATC and was numbered Chung-16. In all, 22 CAF aircraft were received before the end of the war in 1945. By the middle of that year the good old Junkers Ju 52/3m and W 34 were again the only aircraft still airworthy and when the war ended CATC had three Lockheed Hudsons and the W 34, four pilots and ten co-pilots.

In August 1945 the Government sold 20 % of the company to private Chinese financial groups. CATC purchased 12 C-47s from USAAF surplus stores in India at the end of the year and acquired some 150 C-46s and C-47s in July 1946. Many of these were cannibalised for spare parts, however. The delivery of these aircraft finally put an end to the long and eventful career of the last of the Chinese Junkers aircraft.

Eurasia Fleet List

Type	Fleet No	C/n	In Service	Remarks
Junkers W 33	EU I	2545	2.31-8.32	Ex D-1696. Crashed 26.8.32
Junkers W 33	EU II	2560	2.31-7.31	Ex D-1827. Shot down 2.7.31. To Mongolian Government
Junkers F 13	EU III	747	2.31-12.32	Ex D-600. Crashed 15.12.32
Junkers F 13	EU IV	746	2.31-8.37	Ex D-436. Destroyed by Japanese attack 8.37
Junkers W 33	EU V	2561	6.32-2.33	Ex D-1839. Crashed 1.2.33, to DLH and repaired, to D-OFEZ
Junkers W 33	EU VI	2563	7.32-9.32	Ex D-1855. Crashed 1.9.32
Junkers W 33	EU VII	2564	2.33-8.37	Ex D-1894. Under repair from 1937. Destr by Jap bombs 8.12.41
Junkers W 33	EU VIII	2543	3.33-8.37	Ex D-1695. Destroyed by Japanese attack 8.37
Junkers W 34	-	2737		Ex D-4. Crashed 29.4.33 before delivery
Junkers W 34	EU I	2738	6.33-7.35	Ex D-5. Crashed 4.7.35
Junkers W 34	EU II	2739	6.33-3.43	Ex D-7. To CATC "Chung 16" 3.3.43
Junkers W 34	EU III	2743	9.33-2.35	Ex D-4. Crashed 22.2.35
Junkers W 34	EU V	2746	3.35-9.35	Ex D-UPOL. Crashed 27.9.35
Junkers W 34	EU III	2763	3.35-5.35	Ex D-UKAM. Crashed 11.5.35
Junkers W 34	EU VI	2830	5.35-8.37	Under repair from 1937. Destroyed by Jap bombs 8.12.41
Junkers Ju 52/3m	EU XV	5329	9.35-12.41	Ex D-ANYK. To XT-ABE. Destroyed by Japanese 11.12.41
Junkers Ju 160	EU XVI	4215	10.35-12.35	Ex D-UVUX. Crashed 25.12.35. To D-UVUX after repair
Junkers Ju 52/3m	EU XVII	5104	10.35-5.39	Ex D-AGES. Destroyed by Japanese 6.5.39
Junkers Ju 52/3m	EU XVIII	5294	1.36-8.37	Ex D-AMAK. Crashed 1.8.37
Junkers Ju 52/3m	EU XIX	5472	7.36-3.43	Ex D-AGEI. To CATC "Chung 5" 3.3.43
Junkers Ju 52/3m	EU XX	5502	3.37-12.40	Ex D-ALUE. Destroyed by Japanese 30.12.40
Junkers Ju 52/3m	EU XXI	5087	5.37-7.38	Ex D-ASEV. Crashed 16.7.38
Junkers Ju 52/3m	EU XXII	4068	3.38-12.41	Ex D-ABIZ. Destroyed by Japanese 8.12.41
Junkers Ju 52/3m	EU XXIII	4074	9.38-3.39	Ex D-ASIS. Crashed 12.3.39
Junkers Ju 52/3m	EU XXIV	4072	2.39-12.41	Ex D-AMIP. To XT-AGE. Destroyed by Japanese 8.12.41
Junkers Ju 52/3m	EU XXV	6014	10.40-10.40	Ex D-ASFD (chartered). Destroyed by Japanese 26.10.40

Known Names of Eurasia Aircraft
EU XV "Suchow"
EU XVII "Lanchow"
EU XXII "Chungking"
EU XIV "Hami"
EU XIX "Chengtu"
EU XXIII "Chiao T'ung 1" (Communications 1)

CATC Fleet List 1943-45

Type	Reg	Chung No	C/n	In Service	Remarks
Nakajima Ki.34	XT-ATB	1		5.43-3.44	Ex CAF. Crashed 26.3.44
Heinkel He 111A	XT-ATC	2		.43-12.44	Ex CAF. Crashed 25.12.44
Vultee V-1A	XT-ATD	3		.43-	Ex CAF
Vultee V-1A	XT-ATE	4		3.43-9.43	Ex C-2333. Crashed 25.9.43
Junkers Ju 52/3m	XT-ATA	5	5472	3.43-45	Ex EU XIX. W/o in 1945
Lockheed A-29 Hudson	XT-ATF	6		6.44-10.44	Ex B-31011?. Crashed 20.10.44
Lockheed A-29 Hudson	XT-ATG	7		6.44-11.44	Ex B-31004. Crashed 10.11.44
Lockheed A-29 Hudson	XT-ATH	8		8.44-	Ex B-31011?
Lockheed A-29 Hudson	XT-ATI	9		9.44-	Ex B-31008
Lockheed A-29 Hudson	XT-ATJ	10		11.44-	Ex B-31005
Lockheed A-29 Hudson	XT-ATK	11		11.44-	Ex B-31019
Lockheed A-29 Hudson	XT-ATL	12		5.45-	Ex B-31009
Lockheed A-29 Hudson	XT-ATM	14		5.45-	Ex B-31010
Lockheed A-29 Hudson	XT-ATN	15		5.45-	Ex B-31017
Junkers W 34		16	2739	9.44-45	Ex EU II, CAF. Probably w/o in 1945
Lockheed A-29 Hudson	XT-ATO	17		8.45-	Ex B-31015

Previous page: The famous rescue of Junkers Ju 52/3m EU XIX from an auxiliary airstrip carved out of the montain where the aircraft force landed after being attacked by the Japanese. It took off successfully from the mountain on 15 October 1939 - six months after being shot down.

South-Western Aviation Company

South-Western Aviation Company's Stinson SR-5C Reliant "Nanchi".

Already in January 1930 there had been plans to organize an airline company in Canton. Little happened until 1932, however, when a committee with General Heung Hon-ping as Chairman was appointed to promote civil aviation in Kwangtung. The Canton Air Force formed a civil aviation department to assist with the training of pilots. The whole idea was supported by the Kwangtung warlord, General Ch'en Chi-t'ang, who planned to use aviation as an instrument for political consolidation of south-west China.

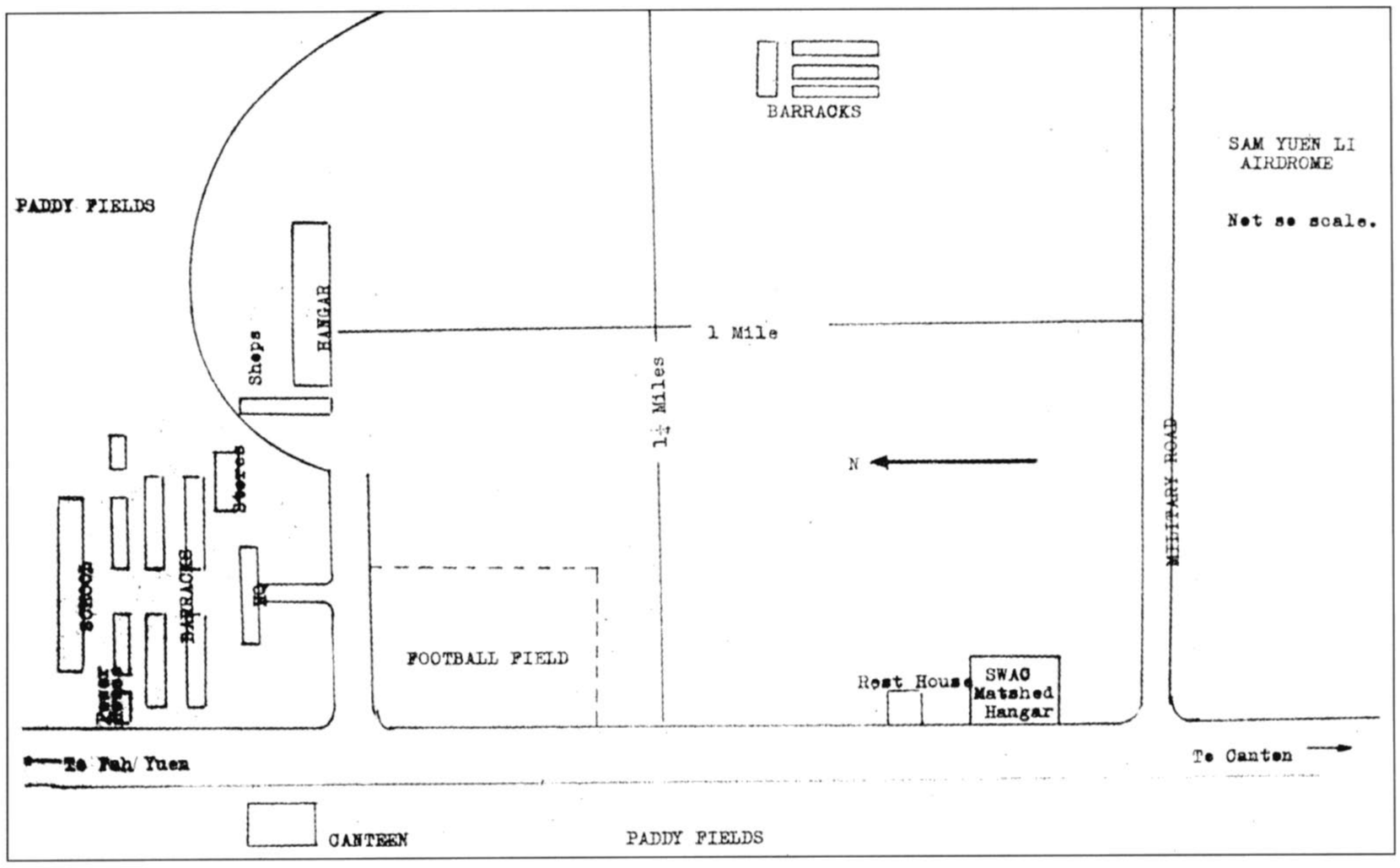
On 15 September 1933 representatives from Kwangtung, Kwangsi, Fukien, Keichow and Yünnan signed an agreement. The warlords of these provinces decided to jointly create a governing committee and later establish the South-Western Aviation Company (Hsi-nan hang-kung ku-fen yu-hsien kung-ssu), or SWAC. The preparation committee (the Southwest People's Air Transport Committee) was formed in Canton on 3 October 1933 and was headed by Liu P'ei-ch'üan, the Head of the Yünnan Aviation Bureau. During the last months of the year, a Canton-Lungchow airline was prepared and registration of the company was applied for.

Three Stearman LT-1 Bull four-passenger mailplanes and three Loening C-2C Air Yacht amphibians were acquired second-hand from American Airways, but these aircraft were never used by SWAC. They apparently ended up in the Canton Air Force instead. The four-seat Stinson Reliant high-wing monoplane was finally chosen as standard type for the airline and initial plans included the acquisition of eleven such aircraft. Eventually only four were purchased second-hand from American airlines in October 1933 and the first two arrived in December 1933 or January 1934.

An aerodrome was arranged at Taisatau, on Honam Island near Canton. Wu Kim-nga was appointed General Manager, but by April 1935 Liu P'ei-ch'üan had replaced him. SWAC was different from Eurasia and CNAC by the fact that all of the company's staff, including all pilots, were Chinese and as far as known there were no foreign advisers

SWAC Aircraft Names

Changkeng (Venus)
Chiming (Morning Star, Venus)
Chihnü (Vega)
Nanchi (Octans)
Nankuei
Niulang (Altair)
Peitou (Big Dipper)
Shinsu (Constellation)
Tienchin (Deneb)
Tienlang (Sirius)
Tzuwei (Polaris)



SWAC's airport facilities at Samyuenli/Pakwanshan (White Cloud Mountain) airport.

other than temporarily. The pilots were former Canton Air Force officers.

First Proving Flight

SWAC had planned to establish five lines: Canton-Lungchow, Wuchow-Kweiyang, Nanning-Yünnanfu, Canton-Fuchow and Canton-Yamchow. A SWAC Stinson piloted by Wu Tsin-ya took off on 7 March 1934 from the Pakwanshan (White Cloud Mountain) Aerodrome, Canton, for a trial trip to Wuchow and Nanning in Kwangsi. On the following day the aircraft continued to Lungchow, near the border between China and French Indochina. The Canton-Lungchow service was opened on 1 May 1934, but due to unspecified difficulties it was suspended for several days after its inauguration and resumed again on 15 May.

The second pair of Stinson Reliants arrived in Hong Kong on 27 April and were delivered to Canton after they had been assembled and tested at Kai Tak. The first two had been named "Chiming" and "Changkeng" and the new machines were named "Peitou" and "Nankuei". "Chiming" had crashed at Watlam but was repaired at the Liuchow aircraft factory. A single Curtiss-Reid Rambler, a Canadian-built two-seat parasol monoplane, was acquired by SWAC as well. This was almost certainly the Rambler sent to Canton in 1932 by Lam Wing-yan, Curtiss-Reed agent, for demonstrations. One of the Reliants was apparently lost, because in October 1934, SWAC was reported to have only three. An American aviator was employed for a period to instruct the Chinese personnel in cross-country navigation.

First SWAC erected a matshed hangar at Pakwanshan (White Cloud Mountain) aerodrome, 2.5 miles north of Canton terminus on the Canton-Kowloon railway. The company later moved to the aerodrome at Shek Pai Race Course, 4.5 miles east of Canton on the Canton-Kowloon railway, which was used by Eurasia as well. There were three matshed hangars and a repair shop at that aerodrome.

A series of trial flights were made along a new route from Canton to Nanning via Mowming, Kiungchow (Hainan Island) and Pakhoi. On 9 August 1934 the Canton-Wuchow-Nanning-Lungchow service was formally inaugurated and the Canton-Hainan Island service was opened on 29 August 1934. A Nanning-Kweiyang trial flight was made in September.

One of the Stinsons made a forced landing in the river near Wuchow in March 1935, but it could be salvaged and repaired. The Far East Aviation Company in Hong Kong imported a four-seat Miles M.3A Falcon Major cabin monoplane in the spring of 1935 and offered it to SWAC. The press reported that it had been purchased by them, but this seems to be in error, as it entered service with the Far East Aviation Training School in Hong Kong instead.

Stinson SR-9D Reliant "Niulang". (Wings of China)

SWAC in 1936

By the end of 1936 three routes were operated: Canton-Wuchow-Nanning-Lungchow-Hanoi, Canton-Kweilin-Nanning and Canton-Kiungchow. All were serviced by a total of five Stinson Reliants. There had been one fatal accident in 1936, in which the company's chief engineer was killed.

SWAC aircraft were given names after different celestial bodies: "Changkeng" (Venus), "Chiming" (Venus, different name), "Peitou" (Big Dipper), "Tienlang" (Sirius), etc. All were marked with the characters "Hsi-nan", an abbreviation of the company name in Chinese.

Two new Stinsons of the SR-5C model were acquired from the USA for an extension of the Canton-Lungchow line from Wuchow to Liuchow in the south, via Patpo, a new Kwangsi mining centre. More than thirty mining companies were in operation there and needed fast communications for their staff. The aircraft arrived in Hong Kong on board the "President Hayes" on 10 May and they were named "Tzuwei" and "Nanchi" after delivery to Canton. One new aircraft (a third Stinson probably) was named "Shinsu" ("Sing Sook"). According to the press, SWAC had ordered another aircraft of unknown type from France, which was said to be on its way to Canton by 11 November 1935[27].

The company had plans for an extension of their Lungchow route over the border to Hanoi in French Indochina and acquired an airmail concession. A number of proving flights was made with Stinson Reliants between 8 June and 4 July 1936 and the first scheduled flight followed on 10 July. Arrangements were made with the French Government in March 1937 to connect the French territory of Kwangchouwan in south Kwangtung with Hanoi, via Muiluk and Pakhoi, but it is not known if this route was ever taken up by SWAC.

Larger Aircraft

It had been planned already in April 1936 to acquire larger-capacity Stinson aircraft but this was shelved for the time being, probably due to financial restrictions. On 13 March 1937 a contact was finally signed by Leung Chien-pang, SWAC secretary, for a three-engined ten-passenger Stinson Model A monoplane. It was intended for the Canton-Lungchow-Hanoi service.

The Reliant named "Changkeng" crashed into the West River at Samshui early in March 1937 and had to be written off and the pilot and one passenger were killed. Only four of the company's Stinson Reliants now remained, but two new five-place machines of an improved version of the same model, the SR-9D, were on order. The two new Reliants were specially equipped for aerial photography and were to be used initially as survey aircraft for a geographical survey of Kwangtung on behalf of the Kwangtung Government. They arrived in Hong Kong on the "President McKinley" and were delivered to Canton on 7 May after assembly at Kai Tak. When the survey project was completed they were converted for passenger and mail transport.

The all-yellow Stinson Tri-Motor arrived in May 1937 aboard the "President Grant" and was flown for the first time by Stinson Company pilot Walter J Carr at Kai Tak on 25 May. He was to deliver the new machine to Canton and to instruct four Chinese pilots before it was put in service. It was named "Tienchin" and was handed over to SWAC in June.

Stinson "Peitou" crashed at Shekpai (Shoukouling) aerodrome, Canton, on 7 June 1937 during a warming up flight. The left wing was badly damaged and the pilot was injured. The Stinson Tri-Motor was apparently damaged early in July 1937 as well, but was repaired. According to a British Air Attaché report, a French twin-engined eight-passenger aircraft had been acquired by SWAC, but unfortunately nothing more is known about this.

When Japanese air raids on Canton started, all SWAC services were suspended and in November 1937 the company's offices were removed from Canton to Kweilin in northern Kwangsi. New routes from Kweilin to Yünnan, Chengtu and Kweiyang were planned but this network was

27 This report might have been in error, as nothing more was heard about this aircraft.

Stinson SR "Chiming", one the first two aircraft obtained by SWAC.

SWAC Fleet List

Type	C/n	Name	In Service	Remarks
Stinson SR	1)	Chiming	1.34	
Stinson SR	1)	Changkeng	1.34	Crash 3.37
Stinson SR	1)	Nankuei	5.34	W/o before 10.34
Stinson SR-5D Reliant	1)	Peitou	5.34	Cash 7.6.37
Curtiss-Reid Rambler III	2)	Tienlang	6.34	Ex CF-ALL
Stinson SR-5C Reliant	3)	Tzuwei	6.35	
Stinson SR-5C Reliant	3)	Nanchi	7.35	
Stinson SR-5C Reliant	3)	Shinsu	.35	(Possibly crash about 3.36)
Stinson SR-9D Reliant	4)	Niulang	5.37	
Stinson SR-9D Reliant	4)	Chihnü	5.37	Stored in Hong Kong by 8.38
Stinson Executive A	9105	Tienchin	6.37	Ex NC15105. Crash 24.11.37. Still stored in Hong Kong by 8.38

1) SRs 8780, 8782, 8783 and SR-5D 9211A
2) 1031 or possibly 1042
3) 9339A, 9344A, 9347A
4) 5250, 5251 (also 5220 and 5221?)

Three Stearman LT-1 Bulls and three Loening C-2C Air Yachts acquired in 1933 were never used and were taken over by the Canton Air Force.

probably never accomplished. The Stinson Tri-motor crashed near Lungchow on 24 November 1937, while on its way to Hanoi, and the pilot and a mechanic were killed. SWAC was finally dissolved by the Central Government early in 1938 and its personnel and nine aircraft[28] were turned over to the CAF.

Interestingly, the fuselages of the Stinson Executive A and SR-9D Reliant "Chihnü" was photographed inside a hangar in Hong Kong in August 1938.

At the end of October 1937 it was announced that a new air service linking Canton with Hupei, Hunan, Kweichow and Szechwan was to be set up by a company called the South-East Aviation Corporation. The provincial governments involved had subscribed half of the shares and the services were to be opened during the latter part of November. Airports had been prepared and trial flights were to be undertaken shortly. Allegedly, several 15-passenger aircraft had been ordered from France and had arrived in Hanoi and ten Stinsons had been ordered from the USA. Nothing more is known about this company or about its relations to the SWAC, but if it ever existed its plans were certainly never realised.

Top: Stinson SR-9D Reliant "Niulang". (Wings of China)
Bottom: Curtiss-Reid Rambler "Tienlang" with Stinson SRs "Changkeng" and "Chiming", and Stinson SR-5D Reliant "Peitou".

28 A total of nine aircraft seems a bit on the high side, but it is possible that also unserviceable aircraft were included in this number.

Aircraft Production in China

Nanyüan and Ch'ingho, Peking (1910-)

The first aircraft factory in China was located near Peking. In the summer of 1913 the workshops of the flying school at Nanyüan, 8 miles south of Peking, were organised by French mechanic Emile Obre. In the following year Pan Shih-chun was appointed manager. By 1918 the machines and equipment of the workshops included two 10 hp Dion-Bouton engines (one of them driving an electricity generator), seven lathes, two drilling-machines, a cutter, a punch, an emery, two saws, two presses, 25 vices, 10 wing jigs, soldering equipment, two forges, two anvils and a foundry.

Obre designed a monoplane in 1913, which was completed in November that year. Starting in 1916 four two-seat tractor biplanes and an unknown number of two-seat pusher biplanes were built (apparently named Pan Shih-chun Type, after the manager/designer of the workshops). At least four, possibly ten or eleven pushers were completed until 1919. French mechanic Martineche, who was employed at the Nanyüan workshops from 1913 until at least 1922, was involved in the production of these aircraft. In one report he was said to have "constructed Caudrons and engines from raw material", but this seems unlikely.

In 1920 two Italian engineers were to be employed to superintend planned manufacture of aircraft at the "recently completed" workshops at Nanyüan, but nothing further is known about this. By August 1923 the workshops at Ch'ingho, 8 miles north-west of Peking, were building aircraft for the KMC (Feng Yu-hsiang) and in 1924-25 six old Avro 504Ks were rebuilt and one was constructed from scratch. One more was under construction at the time of the report.

The Naval Air Establishment, Fuchow (1918-1931), Shanghai (1931-1937), and Amoy (1933-)

The Naval Air Establishment (NAE) at Fuchow, Fukien, was regarded as "one of the few non-political institutions in China". It was created in the spring of 1918 at Pagoda Anchorage at Mamoi, 10 miles south-east of Fuchow. Y T Barr (Barr Yu-tsao), Y K Tseng (Tseng Yee-king/I-ching), T Wong (Wang Chu/Tsu) and S F Wong (Wang Hsiao-feng) were put in charge of administration, design and construction. S F Wong resigned from his post in 1921. Part of the Government Dock and Engineering Works of the Ministry of the Marine was allotted to the NAE and workshops with a floor area of about 3,000 sq ft were arranged. A number of home products, wood, fabric, etc were tested for possible use in aircraft construction.

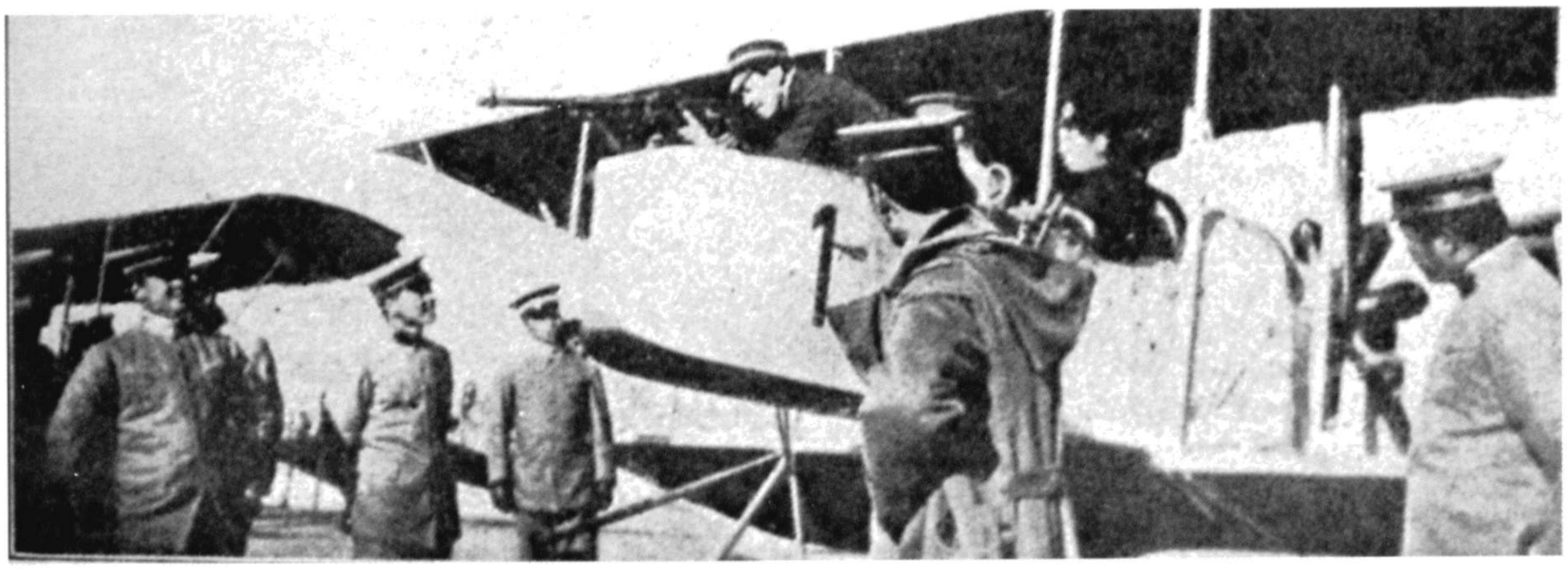
The NAE had two hangars, one old and one built in the early 1920s, and slipways for the aircraft. They also had a steel floating hangar dock for aircraft repairs, which was constructed at the Kiangnan Dock and Engineering Works in 1922. It was capable of housing one aircraft at a time and was made to the design of Captains Barr and Wong. T Wong was appointed Chief Engineer and Designer and Y K Tseng assumed the post of Assistant Director. Director Y T Barr died in 1930.

By order of the Ministry of Navy, the NAE moved to Lunghua, Shanghai, in February 1931 and was reorganised there under director Y K Tseng in March. It had been called the Makiang Naval Aeronautical Factory already at Fuchow, and it now became known as the Kaochangmiao Aircraft Factory. By August 1932 there was a double hangar, which had been completed in June, the floating hangar moored in the Yangtze River alongside the slipway, and an assembly shop. About 170 men were permanently employed. A total of twelve seaplanes and flying boats of the types Chia, I, Ping, Wu, Ting and Chi had been constructed at Fuchow before the move to Shanghai.

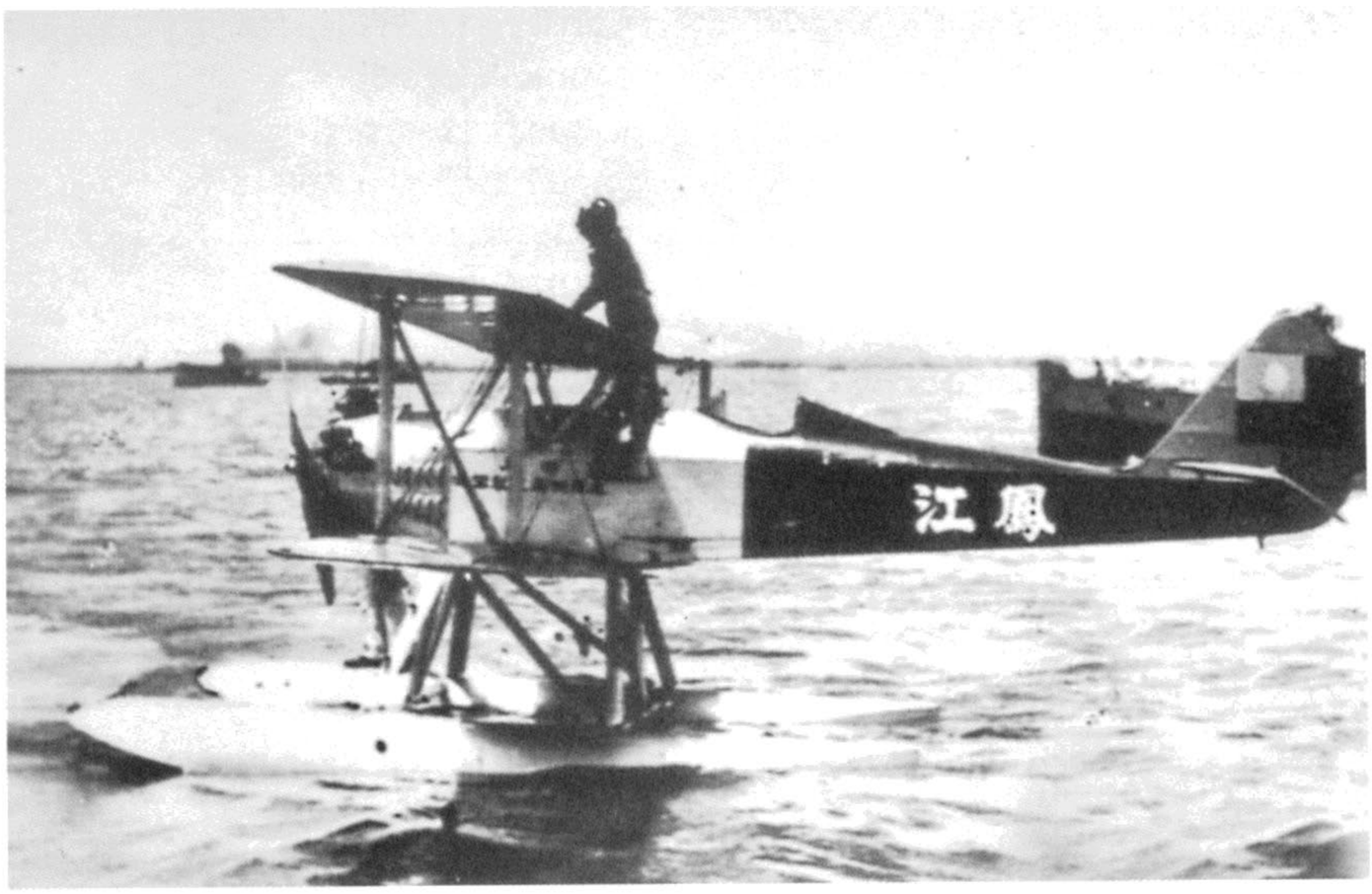
The production programme for 1932 included either six 240-hp[1] seaplanes or alternatively three 240-hp and three 450-hp seaplanes. This plan was never realised, however, as all work was suspended from January to May owing to the Japanese attack on Shanghai.

Wong designed the Keng seaplane prior to his resignation in 1931 when he was employed at the CNAC repair shops in Shanghai. In 1933 Y K Tseng replaced Shen Te-hsieh, who had for some time been director of the factory. In June that year Captain Tseng made a goodwill flight up the Yangtze Valley in a seaplane built at Shanghai in order to raise funds for the factory.

1 220 hp Whirlwind, probably.



Two-seat pusher type biplane built at Nanyüan, Peking, in the 1910s.



Left: Schoettler I, built at Shanghai.
Right: Chinese Navy-built Keng floatplane named "Chiang Feng".

By March 1934 the main workshop, storehouses and offices were in a building adjacent to the hangar. The Hsin floatplane designed by Mar Te-tsu was under construction and the factory had three Gipsy II, two 130 hp Jimpu and two old Curtiss engines in store. Later in the year it received new funds from the Ministry of the Navy and started to improve the premises, but its activities during 1935-36 concentrated on the assembly of fourteen Fleet trainers for the Air Force. Other aircraft were repaired and rebuilt.

The factory moved to Henyuan after the Japanese attack in 1937 and was renamed No 8 Repair Shop. It moved on to Ichang and then to Chengtu in 1939.

In 1933 the Navy built a two-seat trainer designed by D S Pan at Amoy. By February 1935 four Chinese were employed in the design and drawing office at Amoy and there were four carpenters and four mechanics in the workshops. Two small single-seaters designed by Captain Chen Wen-lin were under construction. A later report mentions one small single-seater and a copy of the Avro Avian being under construction, but nothing more is known about any aircraft built at Amoy.

Three Schreck FBA flying boats (copies of the FBA 17/19) were built for the Navy by the workshops of the Tsingtao Naval Aviation Centre in the mid-1930s. It is likely that old spare parts, or crashed aircraft, were used in the construction of these flying boats, which were possibly fitted with 230 hp Salmson engines. The Tsingtao repair shops also built three gliders based on a French design. In March 1937 the first of these was towed airborne for the first time.

Lunghua, Shanghai (1922-1923)

In 1922 Shanghai-based General Lu asked the German firm Buchheister & Co to build an aircraft factory at Lunghua. A concrete hangar with workshops was constructed and Germans Ferdinand Leopold Schoettler and Ernst Fuetterer were hired and put in charge. Two 250 hp Benz engines and two each of the 160 hp and 260 hp Mercedes were obtained and construction was started of six two-seat aircraft.

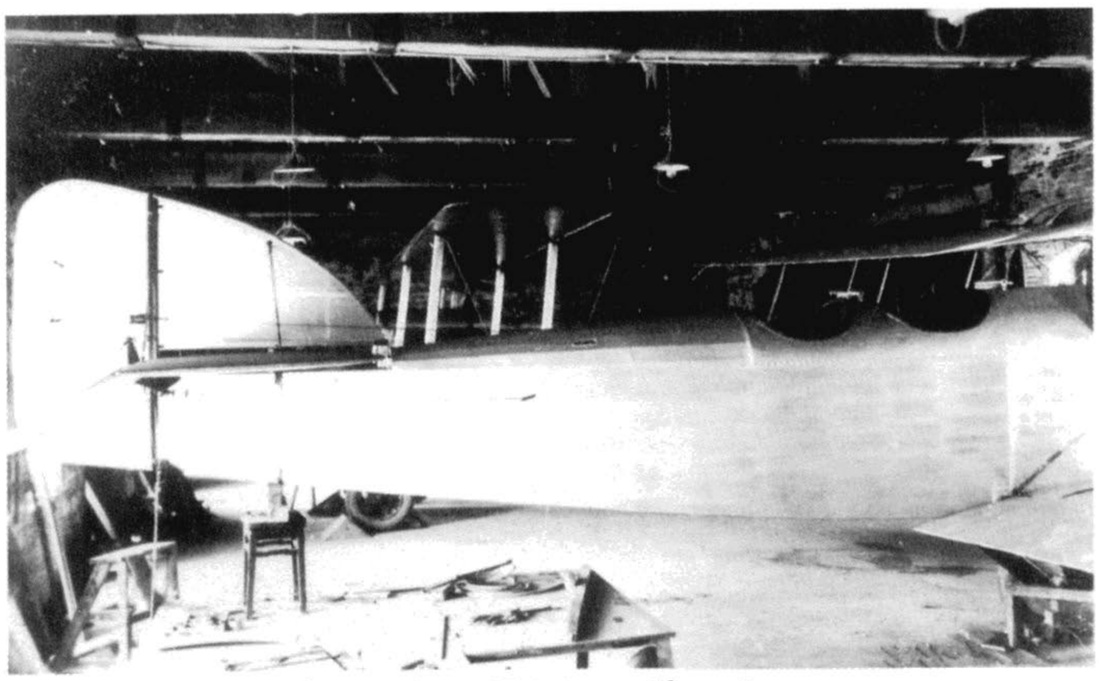
The first, which was powered by the 160 hp Mercedes, was completed and flown in August 1923. It was called the Schoettler B I. General Lu's acquisition of a batch of French aircraft put an end to the experiment with self-sufficiency and work in the factory was suspended. Schoettler left for Shansi in 1924.

Canton, Kwangtung (1923-1923)

Guy Colwell, an aircraft engineer who had previously worked with Bristol in England, and American aircraft builder Arthur Wilde were hired by the Canton Government (Sun Yat-sen) in 1922. They arrived in Shanghai in April 1923 and were asked to design a reconnaissance and light bombing aircraft. A small factory was established in Canton and the aircraft was completed in June 1923. It was named "Rosamonde" ("Ching-ling"). Another three were to be built, but on 20 September 1923 a fire at the workshops destroyed the "Rosamonde" and the parts being built for the new aircraft.

Taiyüan, Shansi (1924-1927)

Yen Hsi-shan in Shansi contacted British Captain Ernest Edmund Fresson and asked him to organise aircraft production at Taiyüan. A contract was signed and Fresson promised to produce three prototypes. He hired German aircraft engineer Ferdinand Schoettler, who had previously



Schoettler S 4 under work at Taiyüan, Shansi.

been working at Lunghua, Shanghai and most of the workers had been trained in the factory at Lunghua. Workshops were arranged at the arsenal and work on the first aircraft started in the spring of 1924.

Engines, parts and materials were purchased from the Aircraft Disposal Company in Great Britain. Wright, the arsenal's Technical Adviser, helped to design the aircraft, which was called the Schoettler B3 (B III). It was flown for the first time in September 1925 and by January 1926 a second aircraft was half-finished. About 80 mechanics worked under the direction of Schoettler in the factory, which consisted of a fitter's shop and a carpenter's shop[2].

Shoettler's second design at Taiyüan was the Schoettler S4 trainer, which was completed sometime around May 1926. There were plans to build a further batch of four Schoettler C5 reconnaissance aircraft, but this was never realised and Schoettler was dismissed in August 1926. It had proven difficult to find suitable materials for the aircraft production locally.

In March 1925 Fresson tried to acquire Avro 504K trainers and a number of engines from Great Britain, but the British authorities did not approve of this. He then started construction of Avro 504s at the arsenal, but this work probably came to a standstill when he left Shansi in October 1925. In January 1927 an Avro 504K was completed and successfully test flown.

The Taiyüan factory apparently continued to be used as a repair shop and in 1936 it became No 7 Repair Shop. It moved to Chan-an and was equipped for the repair of USSR-supplied fighters, but was later incorporated into No 2 Repair Shop.

2 An engineer called Hausemann is mentioned in some reports. This is perhaps a mistake for the German mechanic Hartmann.

Type 3 fighter built by the Kwangsi Mechanical and Aircraft Factory.

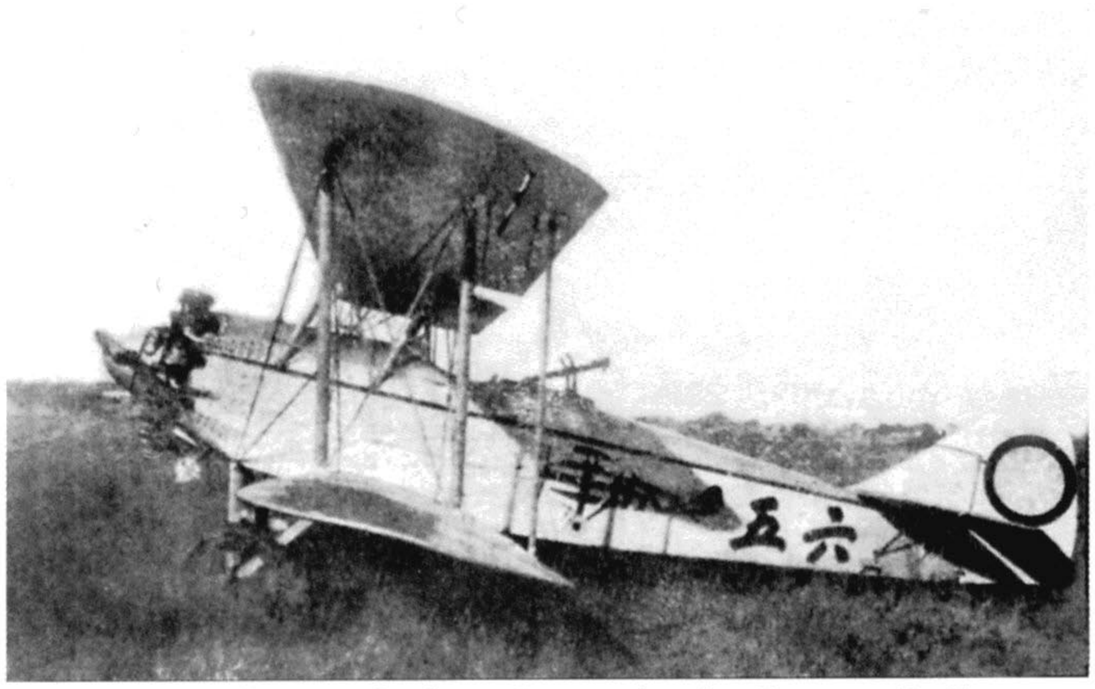
The Canton Aircraft Works, Kwangtung (1927-1936)

In 1928 the Aircraft Works attached to the Canton Aviation Bureau designed and built a small two-seat biplane. This workshop, which until 1927 only overhauled, repaired and rebuilt aircraft, was situated inside Canton City. Chief engineer Mei Lung-an (Mei Yung-on), a Chinese-American, was appointed head of the factory in 1927 and it was manned by artisans previously employed by various American firms. In 1928 Junkers had offered to deliver one assembled Junkers A 35 pattern aircraft and pre-fabricated kits for another two, factory equipment and a production licence. One aircraft was ordered, but the offer for the factory was not taken up.

The aircraft built at Canton was first flown in December 1928 and was christened "Cheng Kung" (Success). It was called Yang Ch'eng ("The City of the Five Rams", an ancient name for Canton), as were all subsequent designs of this factory. A total of four Yang Ch'engs were built in 1929, followed by another four in 1930.

By the beginning of 1933, 22 aircraft, mostly observation and training biplanes, had been built in Canton. In May the same year four copies of the Avro Avian were completed

"Cheng Kung No 1", a copy of the Caudron C 59 made by the Hungjao Aircraft Workshop in Shanghai.



"Yang Ch'eng" No 56 built in Canton for the Canton Air Force.

and in the spring of 1934 an aircraft based on the Douglas O-2MC was built and this was followed by another four Yang Ch'engs of the same type.

In 1934 Brig General Mei Yung-on, who was still Director of the Canton Aircraft Works, went to France and Italy to study aircraft manufacture and to buy factory equipment. By that time the factory had a floor area of 72,000 square ft in three main buildings with machinery of American and German manufacture. One of the recent orders was for six two-seat light bombers, similar to, but smaller than the Vought Corsair. A single-seat fighter had been built, but unfortunately no details are known about this type.

After the take-over by the Central Government in 1936 the factory was renamed No 5 Repair Shop. It apparently built several Yang Ch'engs before it moved to Hsianyun in 1938. A total of more than 60 Yang Ch'engs were allegedly built at Canton.

Tsingtao, Shantung (1927)

German Franz Oster was employed in June 1926 at the Tsingtao Iron Works, from 1927 the 4th Arsenal, as technical advisor and engineer. Shantung warlord Chang Tsung-ch'ang ordered an aircraft, allegedly based on a Caspar design, from the Arsenal. When Oster had finished it in December 1927 it was sent by rail to Tsinan for testing. It had turned out much heavier than calculated, however, and was apparently considered unsafe and was never flown.

Hungjao Aircraft Workshop, Shanghai (1928-1929)

The Hungjao Aero Factory, located on the western outskirts of Shanghai, was started in November 1927. In August 1928 it was established by the Ministry of War as a factory with four mechanics, 31 supervisors and 120 workers, and was called the Hungjao (Hung Ch'iao) Aircraft Workshop. A design team headed by Yao Kuo-chang designed a prototype closely based on the Caudron C.59. After completion it was test flown in January 1929 by Colonel Sun Te-shih (Shen Teh-hsieh), the director of the factory. He was a graduate of the Peking Aviation School and the Chefoo Naval College and had studied in America and worked with Vickers and Rolls-Royce in Great Britain. When displayed to the public on 22 February it had been named "Cheng Kung No 1"[3].

By April 1929 a second aircraft was reported to be under construction. Allegedly the factory continued to build a number of Avro trainers, which were rejected by the air force. This information has not been confirmed, however, and it seems that not more than one aircraft was in fact ever built. Some of the Junkers K 53s and F 13s delivered from Germany and Sweden in 1929 were erected by the Hungjao factory.

Kwangsi Mechanical and Aircraft Factory, Liuchow (1932-1937)

The Kwangsi Government set up a general machinery factory at Liuchow in 1927 and in July 1932 this facility was changed into an aircraft factory. Lai Kwok-pui (Lai Kuo-pei) was appointed director and Captain Chu Jeng-chang, (Chee Jeang, Winton Gee), who had trained in the USA, became head designer. Engineer C H Hatton was hired as advisor[4]. He was part of the British Air Mission to Kwangsi that was organised by the Far East Aviation Company (FEACo). For a short period the factory was used only as a repair workshop, but in the spring of 1933 Wei Chiu, Loh Kam-chuen, Lee Tak-shang and Tse Chiu were sent to England for instruction in aircraft manufacture.

Captain Gee designed a single-seat parasol monoplane trainer and this type became the first aircraft built by the new factory. It was successfully tested in July 1933 by FEACo pilot A V Harvey. Next, the factory turned out six licence built Avro Avians. A batch of six Avro Cadets and another series of six Avians followed and by December 1934 a single-seat fighter was reported to be under work. In addition the factory made repairs and overhauls of other Kwangsi Air Force aircraft. Materials and engines were purchased from England through the FEACo.

One of the founders of the Amoy Civil Aviation School, Chen Kuo-liang, started to design a glider in May 1934 during his stay with the Kwangsi Mechanical and Aircraft Factory. It was completed at the end of July and was delivered to the Kwangsi Air Force.

In February 1935 the British air attaché visited the Aircraft Factory at Liuchow. Since production had started, a total of 12 Avian and two Cadet trainers had been built. Another six Cadets were under construction. The attaché stressed in his report that the factory carried out complete production, not just assembly of imported parts. In addition, an example of the German Zögling glider was under construction.

By August 1935 a total of 15 Avians and eight Cadets had been constructed, and many aircraft used by the Kwangsi Air Force had been overhauled or rebuilt. Two Avro 626s were under construction and there were plans to produce six examples of this type. The factory was working on an order for 7,000 250-lb bombs. Lai, now General, was still head of the factory.

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3 It would originally have been named after Hungjao Aerodrome.
4 Hatton was initially scheduled to remain at the factory until 17 May 1935, but renewed his contract and stayed longer.

In the spring of 1937 a single-seat fighter biplane designed by Chee, the Kwangsi Type 3, was completed and tested. By July that year 28 trainers had been built and 102 aircraft had been completely rebuilt. Major repairs had been carried out on 210 aircraft since 1932. The factory, which now also produced 25-lb and 50-lb bombs and ammunition, employed 150 skilled workers and about 350 apprentices and unskilled workers. The Kwangsi Mechanical and Aircraft Factory was taken over by the Central Government in July 1937 and became the No 9 Repair Shop.

Capital Aviation Factory, Nanking (1933-1934)

In 1930 the Central Government confiscated the machinery found in the aircraft repair shops of Feng Yü-hsian's North-Western Army at Loyang. The so-called Capital Aviation Repair Shop, headed by Lin Fu-yua, was then set up on 1 August 1930 at Min Ku Kon, Nanking. It was moved to outside the Kuan Hua Gate of Nanking in July 1931. In March 1934 it was renamed the Capital Aviation Factory.

In May 1932 overseas Chinese of Batavia, Indonesia, collected money to build fighter aircraft after the Japanese attack on Shanghai in 1932. The donated funds were used for a trainer/light bomber, somewhat similar to the Douglas O-2MC, which was initially named "Batavia Overseas Chinese", later "Java". It was designed by a team headed by Tien Pei-yei and built in Nanking. Construction started in December 1933 and the aircraft was completed in June 1934. The factory was renamed No 1 Repair Shop and moved to Henyang in 1937.

The Central Aircraft Manufacturing Company (CAMCO), Hangchow (1934-1937), later Loiwing (1938-1940)

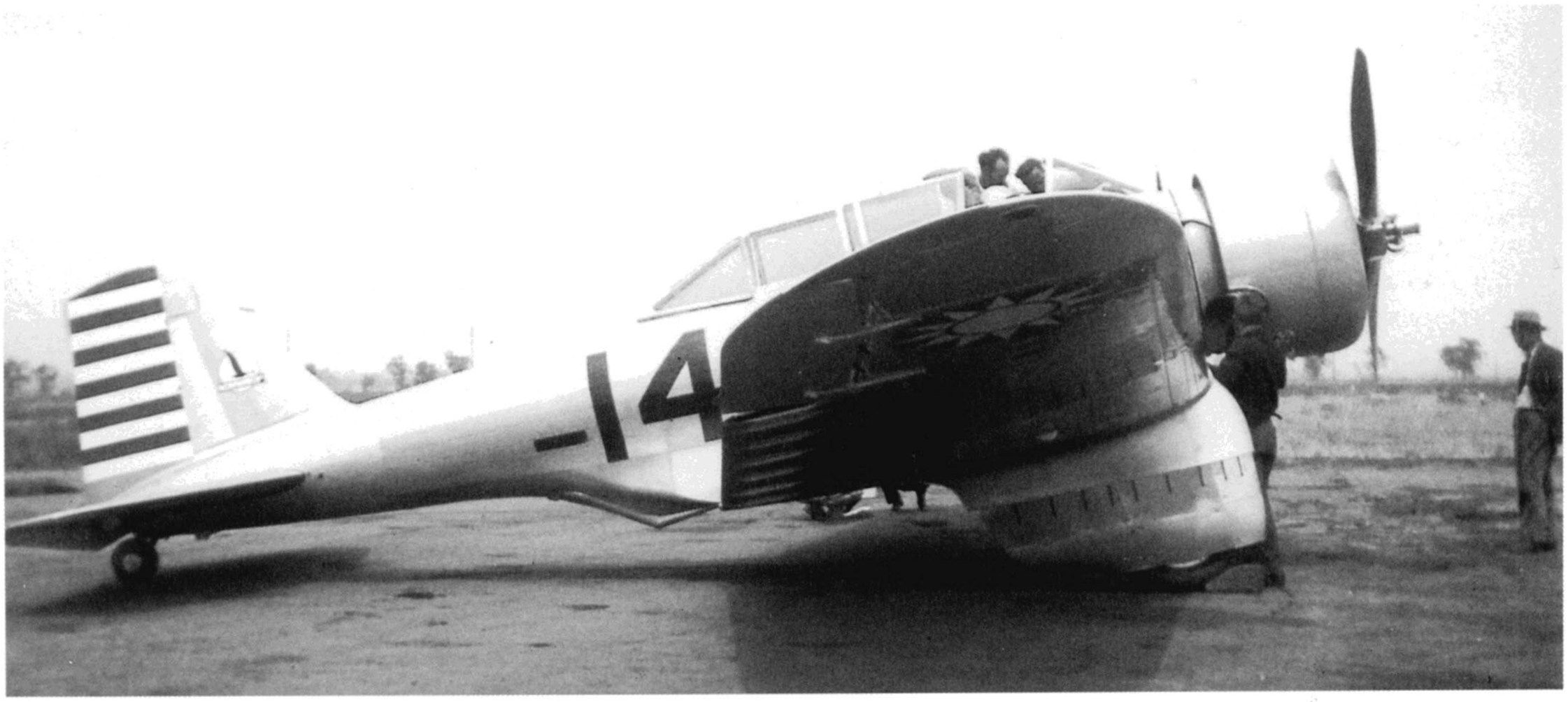
Georg C Westerwelt, a representative of the Curtiss-Wright Aircraft Corporation, submitted a proposal for the building of an aircraft factory to T V Soong in April 1932 and in February 1933 William D Pawley, top company executive, arrived to continue the negotiations. Dr H H Kung, Minister of Finance, and Pawley and Zimmerman from Curtiss-Wright finally signed a contract on 4 December 1933. A factory was to be built at Chien Chiao Aerodrome, near Hangchow. It was to manufacture parts, assemble and repair aircraft, and the shops were to be tooled for a production of 60 fighter aircraft per year.

For the purpose of carrying out the contract Curtiss-Wright and Douglas had formed a separate company called the Inter-Continent Aviation Corporation, New York, in April 1933. The Central Aircraft Manufacturing Company, Federal, Incorporated (CAMCO), was a branch of Inter-Continent, whose President was William Pawley. Inter-Continent was to furnish, at the expense of the Central Government, 12 American engineers as department heads in charge of an estimated personnel of 500-600 Chinese.

The cost of the factory was to be refunded in five years, after which it would become the property of the Government Military Council. The Government was to purchase from the factory aircraft of a minimum value of US$ 500,500 per year. At least 75 % of the engines purchased had to be of Curtiss-Wright manufacture. The agreement also included Northrop designs. There were fears that the Hangchow location was strategically undesirable, as it could easily be attacked from Japanese carriers, but eventually this did not change the factory's location.

The first manager was Paul G Zimmerman, and Edwin Pawley was appointed president. The management was American, there were eight American instructors (Curtiss-Wright engineers) headed by E A Warren, and 300 Chinese workers. Plant manager was George Arnold (later Charles W Hunter) and Colonel Wang Sau became chief Chinese engineer[5]. The factory located less than a mile north-east of the airfield and was completed and opened in August

5 Wang had previously worked with CNAC and Boeing in the USA.



The Northrop Gamma was CAMCO's first product, although all aircraft were assembled from imported parts.

1934. By November it was busy rebuilding ten crashed Curtiss Hawks and it was about to begin the construction of 25 Northrop Gammas, which was CAMCO's first order. Production details will be dealt with separately.

In 1937 the Japanese soon started to bomb the factory. Its materials and tools were evacuated to Wuchang in September and to Hankow in December. Production was resumed in January 1938 in buildings formerly owned by the Standard Oil Company, but in September 1938 when the Japanese started to threaten Hankow it was decided to move the factory to the vicinity of Kunming. It finally began to move to Loiwing on the Burma frontier in December 1938.

The village of Loiwing is situated in Tengyueh district, about 3 miles inside Chinese territory in Yünnan. Machine tools and assemblies were loaded onto flatcars and sent down to Hong Kong. As much as possible was then shipped by steamer, first to Haiphong, and then to Rangoon in Burma. The trip continued by barge and rail to Lashio (in Burma) and by truck and elephant to Loiwing, just across the border, where 6,000 workmen started to build a new factory. Several new contracts were signed, one in August 1938, one about June 1939 calling for the supply of materials through Rangoon to Loiwing, and in September or October 1939 contracts for aircraft parts and materials.

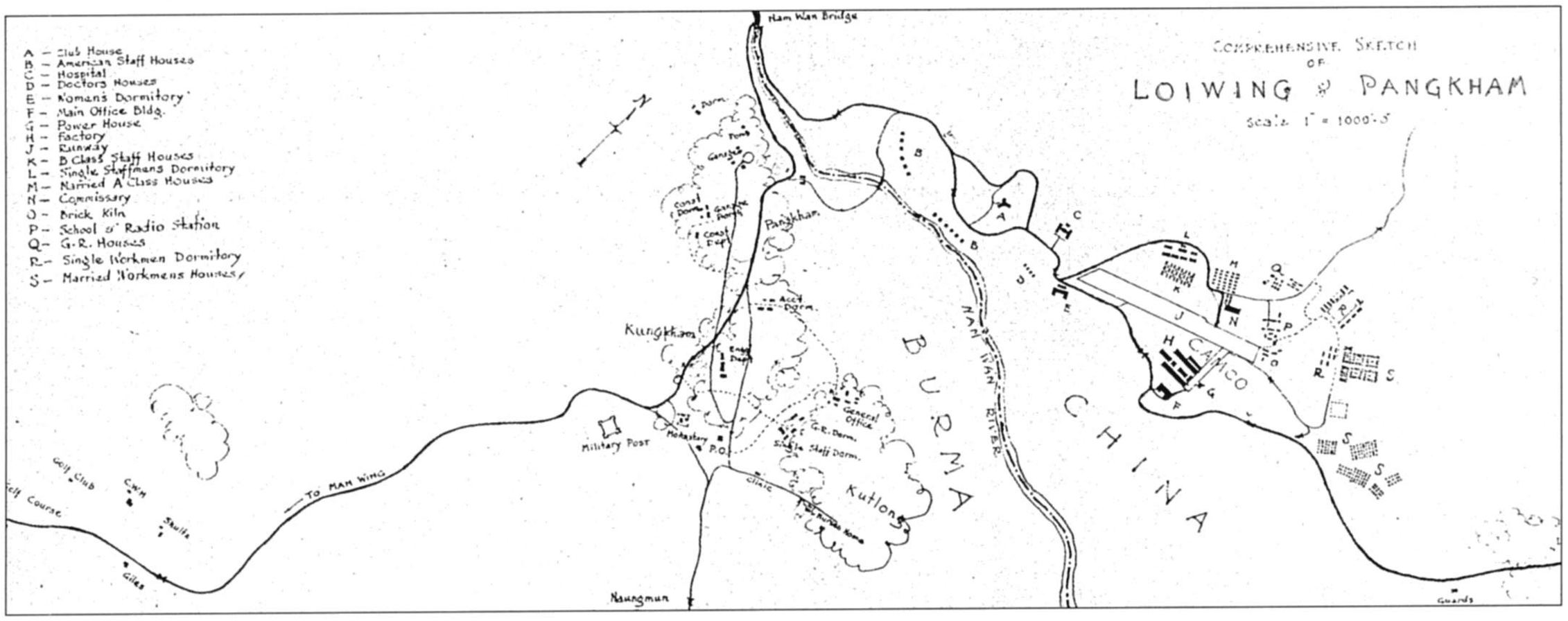
An airfield was ready in January and during that month construction of the plant was begun. Pre-fabricated materials that were imported from the USA through Rangoon in February 1939 were used in the construction of the main buildings. When completed, the factory was grouped around a large 3,000-ft runway. To the south the factory buildings, the main office building and a powerhouse with two large diesel motors had been erected. To the west were a clubhouse, a 50-bed hospital, the American staff and doctors' houses and a women's dormitory, to the north staff houses, single staffmen's dormitories and a radio station, and to the east the single worksmen's dormitories and married workmen's houses.

The factory itself consisted of two principal structures, 500 x 100 ft, containing machinery, wood-working shops and assembly facilities, one 100 x 300 ft building for the final stages of assembly, two 75 x 150 ft storehouses and an 80 x 50 ft engine overhaul house. Much of the machinery installed was originally moved from Hankow to Hong Kong and later shipped to Loiwing via Rangoon. Materials were shipped from Rangoon up the Irrawaddy River to Bhamo. From there they were transported by truck for a distance of 70 miles to Loiwing.

Manufacture was resumed on 1 July 1939, but the factory was not completed until about 1 June 1940. By November 1939 the personnel consisted of about 20 American technicians and 1,500 Chinese labourers and skilled workmen. In June 1940 there was a staff of 230, including at least 16 foreigners, and 1,100 workmen. Among the Americans were G B Arnold, factory manager, C W Hunter, general manager, and technicians A L Andersson, R M Bell, H E Hoteko, C F Killelea, F Leckell, C K Miller, M K Shipherd, W D Stoker and M D Walsh.

When the Japanese captured Nanning, the Loiwing factory came within range for Japanese bombers. It was bombed first on 24 October and then again on 26 October 1940, when 36 Japanese bombers came from the Burmese side of the border. Casualties were relatively few and the material damage was also not great. The factory's Curtiss Condor transport was burnt on the runway and two Ryan trainers in final assembly and on the runway were completely destroyed. Seven other Ryans were damaged. Two of them were repairable, but the others had to be reduced to spare parts. A CAF Sikorsky S-43 amphibian in final assembly after repairs was damaged, but could be rebuilt.

It was now decided to eventually move to Bangalore in India, but for the time being the factory went on working at night. It was dispersed among camouflaged buildings in the general area of the factory's location. Chien Chang-tsu assumed the post of Chinese Government representative to CAMCO on 1 June 1941. On 1 May 1942 the remains of the factory was finally burnt and evacuated. Much of the aircraft assemblies and machinery had been salvaged and shipped to Bangalore in 1941, where clearing of the site for a new factory had begun on 24 December 1940. Production of Vultee V-12-Ds was resumed there, after the factory had been restructured as the Hindustan Aircraft Ltd. The



Transport Aircraft Used by CAMCO

A number of liaison and transport aircraft were acquired by the Inter-Continent Corporation for use at Loiwing for the transport of emergency supplies and communication with Chungking, Kunming, Rangoon and Laisho. They were registered in Burma.

Vultee V-1A XY-AAF (c/n 9)
Stinson 105 Voyager XY-AAH (c/n 7572) and XY-AAJ (c/n 7571)
Curtiss AT-32A Condor (c/n 42) XY-AAI, ex-NX12390, assembled in Hong Kong in March 1940 and then flown to Loiwing, destroyed in bombing at Loiwing on 26 October 1940
Beech M18R XY-AAL, ex CAF AT-10015
Lockheed 12A XY-AAM (probably c/n 1201, ex NC16052)

Loiwing factory was later rebuilt as a maintenance and repair facility.

CAMCO did not build any aircraft independently. It assembled from parts and subassemblies, and erected imported aircraft. One or two of the total number of a certain type ordered from the USA were often delivered as completed pattern aircraft, while the bulk of the order was shipped to CAMCO as component sets. A batch of 25 Northrop Gammas was completed in 1935. The Douglas O-2MC was produced in parallel, one order for 18 being scheduled for completion in 1935. Twenty-two of the O-2MC6 version were assembled in 1935 and one O-2MC10 was delivered from the USA in 1936, probably as a pattern aircraft for local production. CAMCO production during the July 1936-July 1937 period included 68 O-2MCs, but unfortunately the total number built is not known. Thirty Curtiss Hawk IIIs and twenty Curtiss Shrikes were erected in 1936.

When the Canton Air Force and its factory at Shiukwan came under Central Government control in July 1936 the Canton Government order for 30 Vultee V-11-Gs was taken over and transferred to CAMCO. They were delivered in 1937-38. Then followed another 30 Hawk IIIs, which came in knockdown form through Shanghai and were sent by rail to Hengyang, where an assembly factory was built, then to Hankow and finally to Loiwing. These aircraft were delivered between October 1939 and August 1940.

In June 1940 Harvey Greenlaw, representative of North American Aviation arranged for the assembly at Loiwing of 50 North American NA-16 and 50 Ryan STM-2 trainers ordered from North American and China Airmotive Company, respectively. It was first planned to assemble these aircraft at Lashio, but this was refused by the British Government in Burma. The Chinese Government paid a commission to CAMCO for the assembly at Loiwing.

The first 14 NA-16s and 20 Ryans arrived in Rangoon on 1 July 1940 on board SS "Silver Maple" and on 16 July the British authorities prohibited the re-exportation from Burma of aircraft and parts. The ban was lifted on 17 October, however, and the transports to Loiwing with trucks could start again. The Chinese Government had now contracted for parts and materials to be used for the assembly or manufacture of about 260 American aircraft.

CAMCO managed to assemble most of the 50 Ryan STM-2s and 25 Vultee V-12-Cs intended for completion in 1940, but a batch of 50 Curtiss H 75A-5 Hawks was not delivered at all. Thirty Curtiss CW-21s suffered the same fate. Some of the Ryans had remained in their crates at Rangoon and 90 Chinese CAMCO mechanics and a number of American foremen came down from Loiwing to Mingaladon airport, Rangoon, to assemble them.

Hindustan Aircraft Ltd assembled only a few of the 50 Vultee V-12-Ds scheduled for completion in 1941, although it seems that none reached China, and 100 Curtiss Hawk H81A-3s were assembled by the Chinese mechanics and American foremen at Rangoon for the AVG. The first 35 machines of this type had been shipped from the USA on 19 February. CAMCO/Inter-Continent got the contract to assemble the aircraft and hire personnel, including 100 pilots, for three squadrons. Hindustan assembled a single Harlow PC-5A for the Government of India (RAF) as well, before the factory was taken over by the USAAF in 1943 and later became an independent Indian aircraft producer.

Manshu Koku KK (Manko) (1934-1938), Manshu Hikoki Seizo KK (Man-pi) (1938-1945), Mukden

Japanese-controlled Manshu Koku KK airline (Manko) began production of aircraft for their own needs at Mukden in 1934. Workshops were arranged on the premises of the Military Engineering School, close to Mukden's eastern aerodrome. The Fokker Super Universal was built under licence as the Manko 1 Type and production of that type was actually transferred to Mukden from Nakajima in Japan. It has been reported that 35 Super Universals were built until 1936. Some were modified into Manko 2 Type for photographic work in 1935. The Manko 3 Type was a licence built de Havilland DH 80 Puss Moth, of which 15 are said to have been assembled or built in 1934-37.

The first prototype of the MT-1 Hayabusa (Falcon) passenger transport was completed in December 1936 and a total of 35 were built in three versions, the Hayabusa 1, 2 and 3 Type, for use in Manchukuo. The MT-2 cabin monoplane was built and tested in the summer of 1938. At least 25 aircraft were destroyed at the Manko factory in a fire that occurred on 13 April 1938. It started in a repair shop and then spread to the main factory buildings.

Manko was superseded by the Manshu Hikoki Seizo KK (Manchuria Airplane Manufacturing Co, Ltd), or Man-pi, which was established in accordance with Imperial Ordinance No 130, issued on 20 June 1938. It was organised on 18 June and started business on 1 July. Yoshokatsu Aramaki was appointed president of this company, which continued to build the Hayabusa at the old Manko premises. During the period 1936-39 the German Heinkel company made several proposals on co-operation and offered a licence for the production of a new twin-engine passenger/freight

Beech M-18R XY-AAL (ex-CAF) as used by CAMCO at Loiwing.

type. Plans for a new factory to be located 4 km north of the city were not realized.

Licence production of Japanese aircraft for the Imperial Japanese Army Air Force started in 1936 and included the Nakajima Ki.4, Kawasaki Ki.10, Nakajima Ki.27, Manchu Ki.79, Nakajima Ki.84 (including one Ki.116 model) and Manchu Ki.98 (prototype, not completed). These types were built at Mukden and Kungchuling.

Shiukwan Aircraft Factory, Kwangtung (1935-1938), later No 1 Aircraft Factory, Kunming and Kweiyang (1939-)

In April 1934 the Canton Government made an agreement with Curtiss-Wright, who were to set up an aircraft factory at Shiukwan (later Shiuchow), some 125 miles (200 km) north of Canton. The contract was signed by General Huang Kuang-jui, Head of the Canton Air Force, and William Pawley. Several American engineers arrived to supervise the construction of the factory, which started in July 1934 at the aerodrome south of the city. The "Shiukwan Aircraft Maintenance Factory" was completed and started to operate in August 1935. It was opened officially on 1 December 1935.

During his stay in the USA in 1934 Huang Kuang-jui engaged Charles Healy Day (formerly with the New Standard Aircraft Corporation) to organise the factory as its Chief Engineer. Day recruited Constantine L Zakhartchenko as Assistant Chief Engineer (designer) and Carl H Schneider was engaged as Mechanics Instructor. Mei Lungan was appointed director.

Zakhartchenko, a young aeronautical engineer, was to design the first project of the factory, a twin-engine bomber with 450 hp engines. When he arrived in Canton in August 1934, the factory was not yet completed and the engineering department was instead located at the Canton Air Force headquarters. The bomber project was abandoned in December 1935 because of inadequate personnel and it was soon decided to design a trainer instead and to start an engineering and drafting school. Preliminary design of a two-seat trainer started late in 1934 and after two years a design department had been developed and the Fu-hsing, a multi-purpose biplane, had been designed.

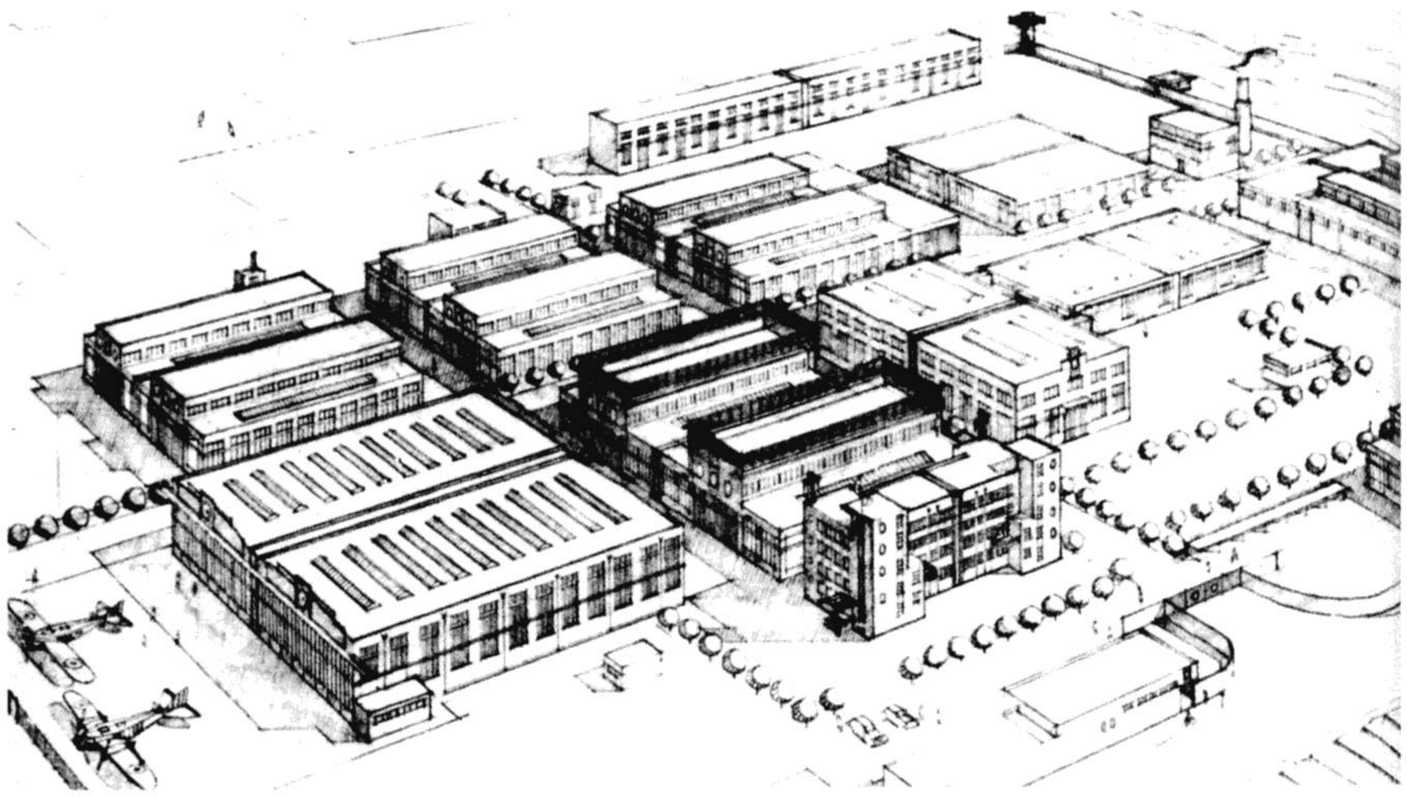
In April 1935 materials for a batch of 20 two-seat and six bomber aircraft were ordered from the USA. Unfortunately the factory was flooded in the spring of 1935 and the machinery had to be cleaned afterwards. The last consignment of machinery arrived in May 1935 and was installed in the following month. A Mr Ingle was in charge of installing the machinery. Manufacture was commenced in July. The first Fu-hsing was completed and test flown in May 1936.

On 1 June 1936 the Zakhartchenko team was ordered to transfer with all unfinished aircraft to the new Tungshan Factory, nearer Canton, and Inter-Continent took over the Shiukwan Aircraft Works. Parts and material sufficient for the assembly of 30 Curtiss Hawk IIIs was to start arriving late in June 1936. The Canton Government had ordered 30 Hawk IIIs and 30 Vultee V-11s in February 1936 to be assembled from US-built components at Shiukwan. On 16-28 June the factory was flooded again and this slowed down operations. On 1 July orders were received to evacuate all personnel, equipment and materiel to Canton because of the political tension between Nanking and Canton.

By 11 July everything had been loaded on boats, but after the Central Government take-over of the Canton Air Force, Zakhartchenko's team were sent back to Shiukwan in September. The factory was re-named the First Aircraft Manufacturing Factory, under the Commission of Aeronautical Affairs in Nanking[6]. Lin Fu-yuan had been appointed General Manager in August and Day and Zakhartchenko were now called Technical Advisers.

In 1936 a complete but uncovered Hawk III pattern aircraft and supplies for another 29 had arrived and the first

6 According to other information the name of the factory changed to "Shiukwan Aircraft Manufacturing Factory" in August 1936 and to No 1 Aircraft factory in January 1939.



Artist's view of the planned Italian SINAW factory at Nanchang.

Hawk was assembled and test flown on 1 June 1937. From 31 August 1936 the factory was raided continuously by the Japanese. After an attack by six Japanese bombers on 31 August 1937 the factory was spread out in 60 camouflaged matsheds and in spite of continued Japanese bombing production went on. Thirty Curtiss H-75M Hawks were delivered and assembled during the summer of 1938.

When the Japanese took Canton in October 1938 the factory was evacuated complete with all materials, machinery and personnel. It was first moved by rail and re-established near Kweilin, but was finally moved by truck to Kunming in December 1938. It was located in a small valley about 7 km west of the city in buildings of modern construction and fitted out with American machinery. By mid-1939 the new factory was in full operation with about 400 mechanics and labourers.

Work on the Fu-hsing was suspended after delivery of the first five aircraft in January 1937 and not resumed until September. Seven were delivered in late 1937-1938, but the completion of the last eight aircraft was delayed due to the evacuation of the factory to Kunming. They were delivered only in 1940-41. In April 1940 work began on the redesigned Fu-hsing AP-2 that was to be built from local materials (plywood) and the construction of a prototype was started.

It seems that a total of 44 Hawk IIIs were assembled (16 in 1937, 22 in 1938 and 6 in 1939). If this is correct, a number of aircraft must have been built from scratch. Another source mentions 26 Hawk IIIs built in little less than two years, manufactured from materials.

By September 1940 the factory consisted of a dozen sheet-iron buildings, partially hidden between low hills, with an average floor area of 75x150 ft. There were 350 workmen. The factory was originally to have built the Chung Shan advanced training monoplane, but since the arrival in Kunming no materials had been available and only repair and rebuilding could be made. Some work was done on the wing assemblies for the Chung Shan prototype, which was not yet completed and two new Fu-hsings were being built from remaining materials. Experiments were made with plywood wing covering (on the Fu-hsing) from materials manufactured in Chengtu. Two Hawk IIIs and a Hawk 75 were being repaired. In July 1940 General Chu Jia-chen replaced Carles Healy Day as director.

The Kunming factory later produced a number of Chung 28 Yi (Chung 28B) fighter biplanes, a redesigned copy of the Polikarpov I-15. It seems that 100 were orde-

Chinese-built copy of the Douglas O2MC. Inscription reads "New Life Style".

red, but only thirty were completed between 1941 and 1943. In 1942 Zakhartchenko started on the design and construction of a new single-seat fighter, the D-2. The evacuation to Kweyang, Kweichow Province, in December 1942, which was made due to the Japanese advances in Burma, and Zakhartchenko's resignation in January 1943 slowed down this project, but No 1 Aircraft Factory later completed the aircraft as the Yenchü (experimental pursuit, XP-1) fighter. The prototype of another fighter, the XP-0, crashed but a total of nine of this type was completed in 1944-46.

Sino-Italian National Aircraft Works (SINAW), Nanchang (1936-37), later No 2 Aircraft Factory Nanchwan (1938-)

A contract was signed in June 1934 with the S A Consorzio Aeronautico Italiano per la China (Aerocina), a company owned by the Italian Government with participation from Breda, Caproni, Fiat and SIAI. The Italian company was to set up a factory called the Sino-Italian National Aircraft Works (SINAW) at Nanchang. The Italian side appointed Luigi Acampora to head the factory and General Chu Lin, who had studied at Fiat in Italy, was appointed Chinese director. The premises were to have been ready by November 1936 but the machinery arrived only at the end of that year. According to the contract, SINAW was to be in full production 30 months after 21 January 1935, that is, in July 1937. All Italian personnel were to be withdrawn within five years.

Production started in November 1936 with an order for six Savoia S 81B bombers. On 20 October 1937 the Japanese bombed the factory. At the beginning of November the Italian Government suspended deliveries of all aeronautical material to China and on 9 December the technical personnel of SINAW were recalled to Italy. Part of the reason for this was alleged lack of co-operation from the Commission of Aeronautical Affairs. At the time of closing on 9 December 1937, two S 81Bs had been delivered and a third was being readied for acceptance trials. Three more were being assembled. Plans for the assembly of 30 Breda Ba 65s and 50 Fiat G 50s were shelved and the orders were cancelled.

What could be saved of the machinery was moved to Haikung cavern at Chunlinkow, Nanchwan (Nanchung), 100 miles from Chungking, late in 1938. A small steel mill was erected inside the huge, nearly one mile long cave, with dies, equipment and machinery imported from the USA and Great Britain. The operation was renamed No 2 Aircraft Factory in August 1938 and Li Kuo-pei was appointed director. A Soviet advisor named Peternov was hired in 1939 in connection with the production of Polikarpov I-16 fighters and he stayed until 1941.

The first I-16, or Chung 28 Chia (Chung 28A), was completed in July 1939, but the majority of the aircraft built were two-seaters (Chung 29) and all were fitted with Wright Cyclone engines. By May 1942 12 had been produced. A further nine were being assembled and were to be ready in July and nine more were expected to be built by October 1942. In addition the factory had built a series of 30 German Hütter H 17 gliders and 10 were almost ready in May. Six other gliders of an unspecified type were built as well in 1940-41.

Starting in 1942 two prototypes of the Chung Yun twin-engine transport were built. No 2 Aircraft Factory moved back to Nanchang after the Second World War.

No 3 Military Aircraft Factory, Chengtu (1939-1943)

It was initially planned to erect new aircraft works at Chengtu for assembly and repair of Soviet aircraft. No 3 Military Aircraft Factory was set up there in 1939 with machinery and equipment brought from Hankow. It had originally been started as the German plant at Pinghsien, east of Changsha, which is described later. It was located together with the Institute of Aero Research and was intended for engine production. A licence for the Wright Cyclone was acquired in July 1940. The factory was merged with No 8 Aircraft Maintenance Shop in 1943.

When the Chengtu facility was visited by an American intelligence officer in October 1941 a batch of 30 Fleet trainers was under work and these aircraft were to be completed by April 1942. It was clear, however, that they were in fact made from US-made components, but the staff did not admit this! "The History of Chinese Aviation" mentions that some 30 Fleet trainers and Chu Chiao aircraft, which were based on the Fleet, were built at Chengtu between 1940 and 1943.

A glider was designed and built in December 1939 by the 8th Maintenance Shop and other gliders built included a German Hütter H-17. Between 1942 and 1943, the 3rd Aircraft Factory built more than 30 DFS Kranich gliders.

T'out'ungho Assembly Plant/Zavod No 600, Urumchi (1940-1941)

In July 1938 the Chinese Government asked the Soviet Union to build an aircraft factory in China. A Russian survey group was sent to Sinkiang early in 1939 to find a suitable site and on 11 August 1939 the Soviet People's Commissariat and the Chinese Government signed an agreement. The Russians were to build an aircraft assembly plant with a planned output of 300 Polikarpov I-16 fighters per year, made from parts and subassemblies supplied by the USSR. The factory was to be located at Urumchi. V S Eskov was appointed director. The Chinese Government had the right to take over the operation completely after 10 years.

Construction started at the end of 1939 at T'out'ungho, a place 40 km outside Urumchi. The first part of the premises was completed in September 1940 and on 1 October the factory was opened. The main buildings were finished in February 1941 and the whole factory with power station, school, dwellings, etc, was completed in June 1942. It was called the T'out'ungho Assembly Plant, but the Russians named it Zavod (Factory) No 600.

Due to the fact that the Chinese Government had not participated in the construction of the factory, it was regarded as a purely Russian undertaking and all assembled aircraft were sent back to the USSR after the war with

Germany started. At least this was the Russian version of what happened. The factory did apparently not deliver a single aircraft to the CAF. A total of 141 I-16s and two two-seat UTI-4s were assembled for the Soviet Union before production of the I-16 was stopped in the USSR in 1941.

At the end of 1943 the Soviet Government decided to close the factory, which had not assembled any aircraft after 1941, and take the machinery to Tashkent. The buildings were sold to China on 21 May 1944 and were finally handed over on 5 June 1945.

Plans and projects

Acting on behalf of the Ministry of the Navy, F C Mathiesen, Peking, wrote to Nielsen & Winther in Denmark in the autumn of 1918, suggesting a contract for an aircraft factory in China. Nielsen & Winther were to finance an aeroplane and seaplane factory, owned 50% by the Chinese Government and 50% by the Danish company. No agreement was made, however. Nielsen & Winther later delivered equipment to the Mukden Arsenal, but this had nothing to do with aircraft manufacture.

Several attempts were made to start local aircraft production at Mukden. A number of Avro 504Ks were turned out, but these seem to have been assembled from parts imported in 1919-20 and found by the Manchurian Army in Peking. German adviser Ernst Fuetterer tried to get the workshops at Mukden in shape to produce aircraft, but without much success. A few more Avro 504Ks were completed about March 1927, but due to structural strength problems they could not be used for advanced flying and production was soon halted.

Early in December 1926 Boixo Frères had received an order for the construction under licence of 20 Caudron C.127 trainers at Mukden. Production was initiated with Russian personnel under the direction of a German named Brinkmann. Wood was imported from Japan and instruments and engines arrived from France. The first Caudron was due to be ready in the spring of 1927, but for some reason none was ever completed.

On 4 April 1931 a contract was signed with Fokker. The Dutch firm was to build an aircraft factory at Mukden and to deliver 30 Fokker D XVI fighters and 30 Fokker C VEs. One pattern/demonstration aircraft of each type was sent, but due to the Japanese occupation of Mukden the whole contract was annulled on 16 October.

The Junkers offer to Canton in 1928 for a factory was later taken over by Nanking. New negotiations took place in 1931 and continued into 1933 about an assembly plant in Nanking, but there was little result. In 1934 a German factory (Schildeconsortium) in Yünnan and a Junkers factory for single-and twin-engined aircraft at Nanchang were discussed. On 2 October and 7 November 1934 agreements were finally signed between Junkers and the Nanking Government[7]. Junkers was to build a factory, called the Chinesische Fluggeräte AG (Chiflag), which was to produce the Ju 160 and a modified version of the Ju 52/3m.

A new, revised agreement was ratified by the Central Government on 16 December 1935. The name of the factory was now Chinesisch-Deutsche Flugzeug und Flugmotoren Fabrik AG (same abbreviation: Chiflag). Rasch (Vereinigte Flugzeugfabriken), Walter (Dutsche Luft Hansa) and Sterz (Junkers) signed the contract, and T L Sung was appointed Director. Initial production plans for the first year of operation included 54 of a military version of the Ju 160 (for artillery spotting) and 24 K 85 bombers. The factory was to be located at Pinghsiang, east of Changsha, and final assembly and handing-over of the aircraft was to take place at Chungking.

The first firm aircraft order was signed in 1936. Junkers was to build 20 Ju 86K bombers in 1938, but no aircraft were ever delivered and the war with Japan in 1937 prevented the completion of the contract. It is not known how much was made on the factory, other than that it was moved to Chengtu and became the Third Aircraft Factory.

In 1939 plans were made for an aircraft assembly factory in Hong Kong, but this project was not realised.

The 4th Aircraft Factory was a glider factory at Kweilin, which was in operation at least in 1942-44.

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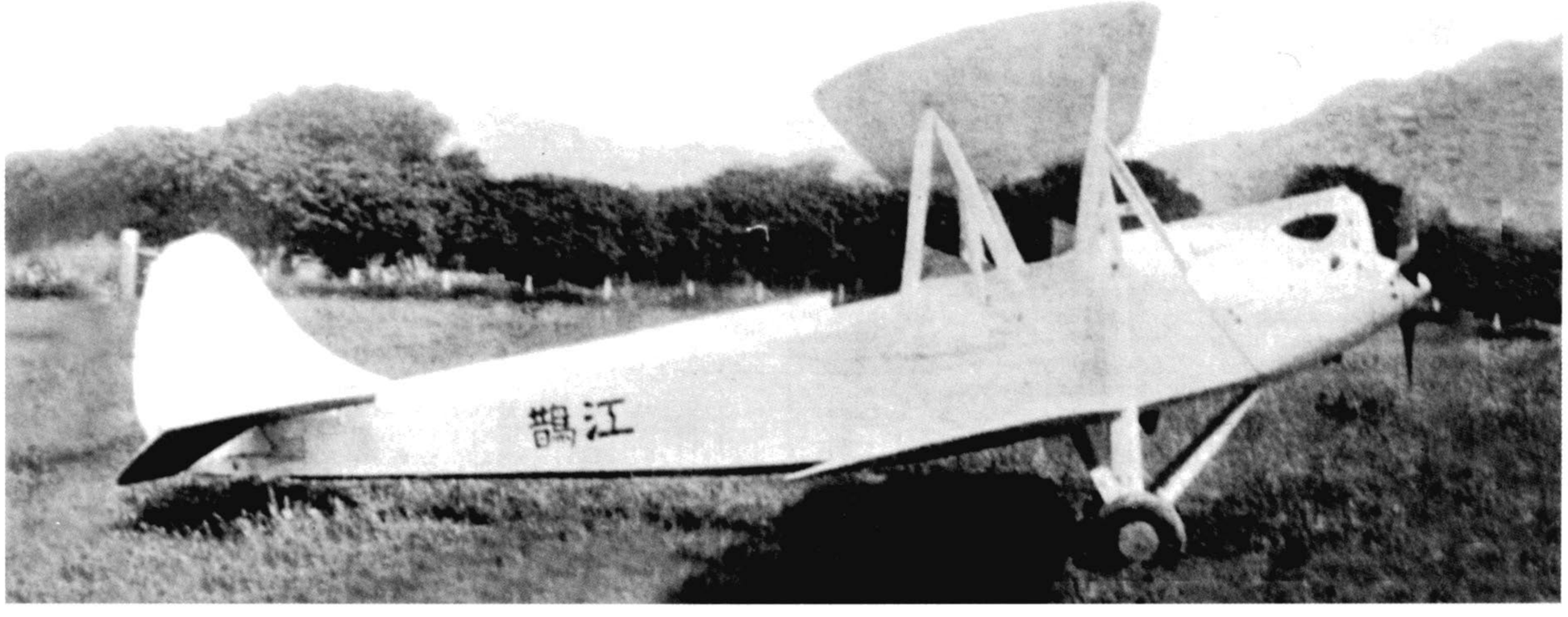
7 It seems that a preliminary agreement to found the Chinesische Fluggeräte AG was signed on 29 September 1934. Ratification date was 18 December 1934.



The "Chiang Chüeh" was designed by D S Pan (P'an Ting-hsin) at the Amoy Naval Establishment in 1933.

Aircraft Types Designed in China

The "Ching-ling" (Rosamonde) built at Canton for the local air force in 1923.

Amoy (Naval Establishment) Types

In 1933 the Navy built a two-seat training biplane with an 85 hp ADC Cirrus III engine, later a 104 hp Cirrus Hermes, at Amoy. It was designed by D S Pan (P'an Ting-hsin) and built by him and Captain Chen Wen-lin, who also tested the machine. Everything except for engine, instruments and wheels was made at Amoy from local wood and British raw material. The aircraft was somewhat similar in appearance to the Avro Avian and was named "Chiang Ch'üeh" (also Chiang Ch'io, River Magpie). Starting in July 1933 Chen and Pan made a round-the-country flight to Tientsin over Hangchow, Shanghai, Nanking and Tsinan with the new trainer.

Two small single-seat wooden aircraft designed by Captain Chen for the 75 hp Pobjoy engine were under construction at Amoy in February 1935, but it is not known if these were ever completed. A report probably written in 1936 mentioned that one small single-seat aircraft and a copy of the Avro Avian were under work. Unfortunately nothing further is known about these aircraft.

Dimensions and Weights

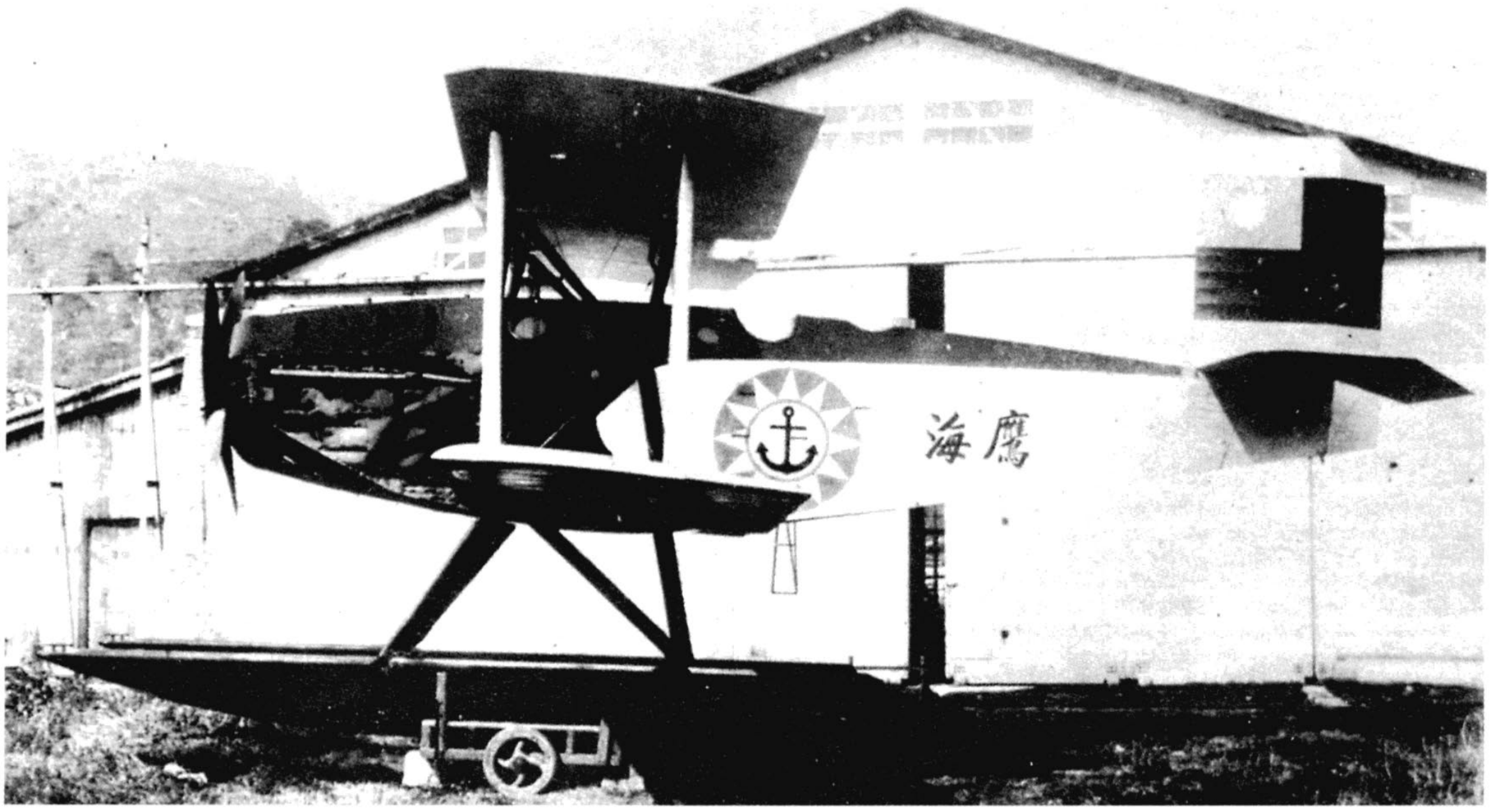
Type	*Span*	*Length*	*Height*	*Weight empty*	*Weight loaded*
Chiang Ch'üeh	8.9 m	7.4 m	2.5 m	468 kg	712-772 kg

Colwell-Wilde Rosamonde

Guy Colwell, an aircraft engineer who had previously worked with Bristol in England, and aircraft builder Arthur Wilde arrived in Shanghai in April 1923. They had been hired by the Canton Government to design a two-seat reconnaissance and light bombing aircraft to be fitted with a 100 hp Curtiss OXX-6 engine. A small aircraft factory was established in Canton, where the aircraft was completed in June 1923. It was allegedly first flown by Wang K'ung-jui and was later christened "Rosamonde" ("Ching-ling") by Sun Yat-sen. It was intended to build another three of the same type, but the parts for the new aircraft were destroyed by a fire at the workshops on 20 September 1923.

Fuchow/Shanghai (Naval Air Establishment/Aircraft Factory) Types

The first aircraft designed and built by the Navy at Fuchow was called the **Chia (Char)** (100 hp Curtiss OX-5). It was a two-seat primary training twin-float biplane, which showed some resemblance to the Curtiss Jenny. All the Navy-built aircraft were made of locally grown Chinese fir and had wooden structure fuselage and wings with fabric covering. The floats were made of wood as well. The first prototype was completed in August 1919, but was not flown until



Chinese Navy (Foochow) floatplane type Ting, named "Hai Ying".

February 1920. The first flight was probably made by Yang Sen-yi (Yang Hsien-i), but the trials ended in disaster when the aircraft crashed on its second flight after reaching 50 feet and the pilot was killed. A second machine of the same type, the Chia-2, was completed in August 1920, while the Chia-3 was built in February 1921.

The **I (Yee)** (100 hp Hall-Scott), a two-seat float-equipped training biplane, was an advanced training variant of the Chia with smaller wing area. It was completed in 1921 and was flown by R C B Hockey (ex-RNAS), the manager of the local branch of a British company, on 26 May 1921, but it is not known if this was the first flight or not. It had been built throughout of local timber, largely bamboo. Its flying characteristics were not judged to be very good and only one was built of this type. By October the Navy had built a total of four aircraft, of which the first two were wrecked.

The **Ping (Beeng)** was a three-seat reconnaissance flying boat (360 hp Rolls-Royce Eagle) with accommodation for a pilot and two gunners. Theoretically it could also be used for passenger transport. The workshops had two 300 hp Rolls-Royce engines and one old 75 hp Curtiss in store. The first example of the Ping, which had been built under the supervision of a Russian, Lieutenant Mikhail Safonov, was completed in May 1924. Safonov was killed on 27 May, however, when he crashed the new aircraft. A second example was completed in April 1925. In April 1926 a training aircraft called "Chiang Kuan" was allegedly built, but no details are known and it has not been confirmed that this aircraft really existed

In 1926 the Navy imported two 120-130 hp Bristol Lucifer engines for its next type, the **Wu**. This was a three-seat observation or general-purpose twin-float biplane. It had a Warren truss wooden fuselage with no metal fittings or wires and there were two side-by-side seats in the rear cockpit. The first prototype was completed in January 1927 and was named "Chiang Fu". The "Chiang Lu", which was built in April the same year, had an in-line engine, possibly a Hall-Scott, but was otherwise similar[1]. A third Wu with Lucifer engine was completed in September.

In 1929 the single-engine four-seat **Ting (Ding)** torpedo-bomber twin-float biplane with 360 hp Rolls-Royce Eagle engine was built. It had two side-by-side seats in the pilot's cockpit and behind which the gunner's cockpit was located. Bombing gear was fitted in the cabin inside the fuselage, which could also accommodate four passengers. A torpedo could be carried under the fuselage, but it is not known if any torpedo dropping trials were ever made. The first prototype was named "Hai Tiao" and was completed in August 1929. A second example, named "Hai Ying", was finished around September the same year[2]. "Hai Tiao" was brought from Fuchow to Shanghai by the aircraft-carrying ship "Ting-an" in December 1929 and was assembled at Kaochangmiao Naval Establishment by Captain Kao Shu-

Names of aircraft built by the Navy

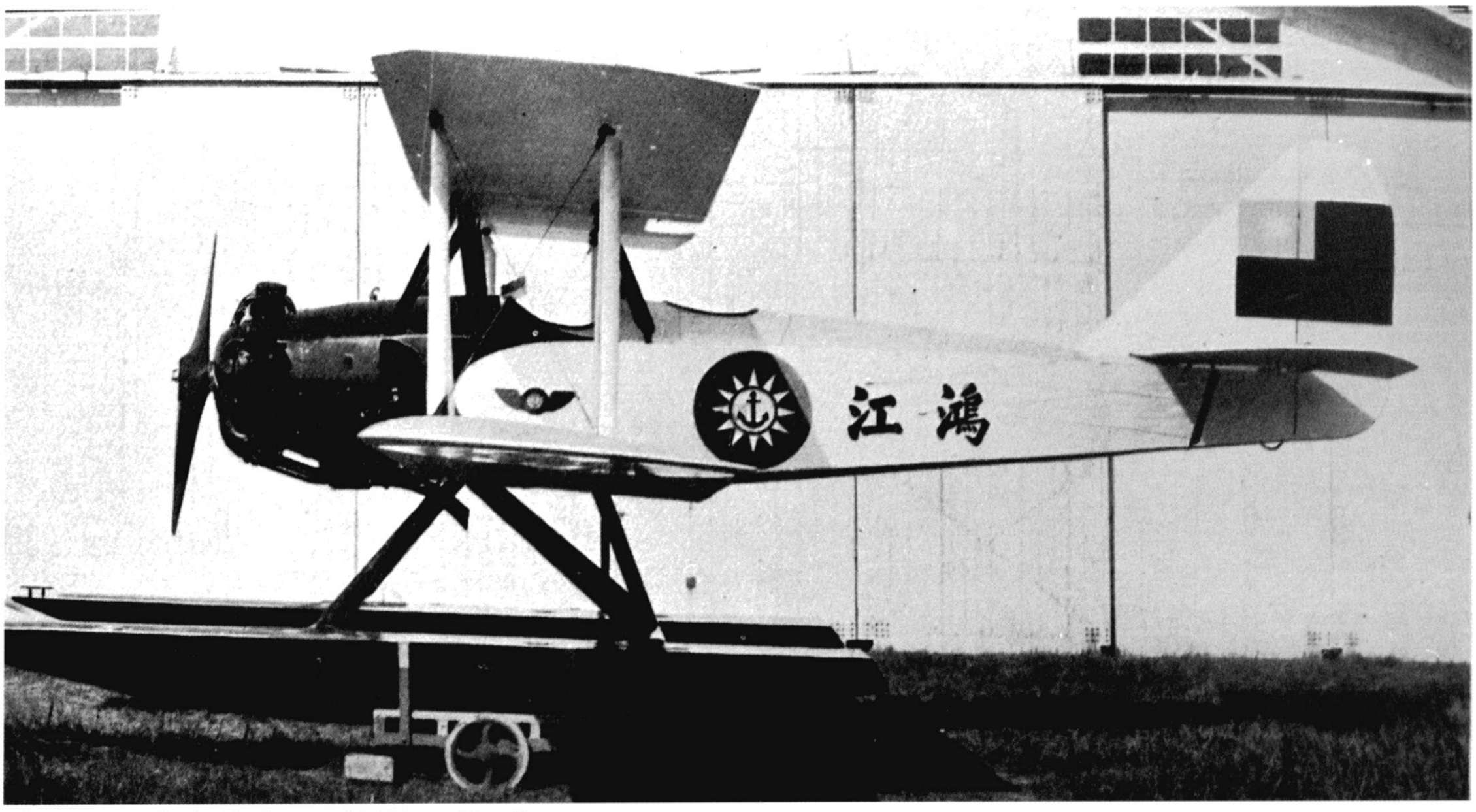
Chia (First), I (Second), Ping (Third), Ting (Fourth), Wu (Fifth), Chi (Sixth), Keng (Seventh) and Hsin (Eighth).
Chiang Feng (River Phoenix), Chiang Fu (River Widgeon), Chiang Hao (River Crane), Chiang Hung (River Wild Swan), Chiang Kuan (River Stork), Chiang Lu (River Egret), Chiang Yen (River Wild Goose)
Hai Tiao (Sea Eagle) and Hai Ying (Sea Hawk)
Ning Hai (Calm Sea)

1 This is from photographic evidence. According to an American intelligence report the Wu-2 was powered by the 120 hp Lucifer IV.
2 "The History of Chinese Aviation" has the completion dates July 1928 for "Hai Ying" and March 1929 for "Hai Tiao", but this is probably not correct. According to an American report, dated 28.10.27, four of these seaplanes with Rolls-Royce engines were under construction. Another source says that two additional examples of the "Hai Tiao" were ordered in November 1929.

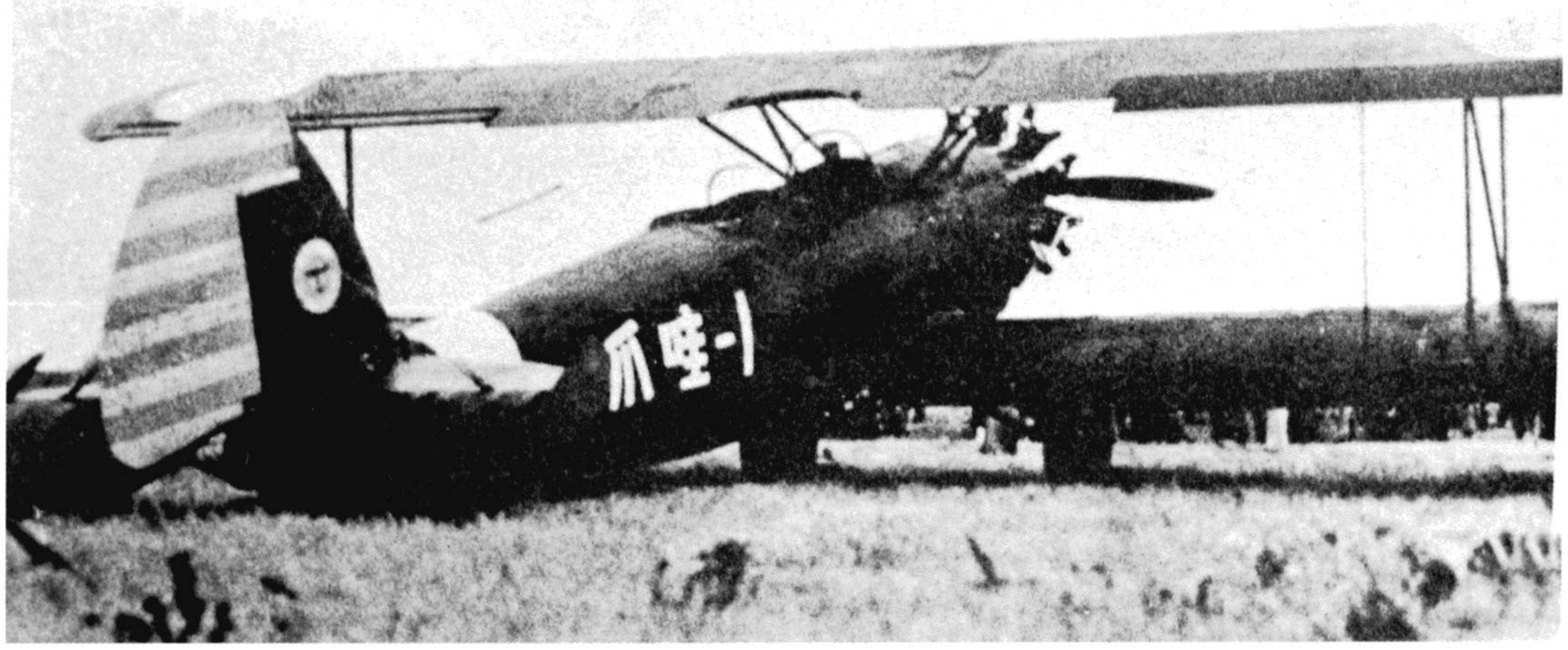
The "Chiang Chüeh" was designed by D S Pan at the Amoy Naval Establishment.

ching. It was successfully tested on 16 February 1930. The second aircraft was made ready for shipment to Shanghai in May 1930.

The **Chi (Gi)** and **Keng (Gen)** were both powered by the 165 hp Wright R-504E Whirlwind (Wright J6) engine. The Chi was intended as a two-seat training or three-seat touring twin-float biplane and had side-by-side seats in the front cockpit. The Keng was a two-seat reconnaissance or advanced training aircraft and could be fitted with a wheel undercarriage in addition to the floats. It had a more slender fuselage, smaller tail surfaces, different wing strut arrangement and folding wings for easier stowage. Construction of the first Wright-engined aircraft, the Chi-1, started about September 1929. It was called the "Chiang Hung" and was finished in June 1930. By then a second aircraft was already under work. "Chiang Hung" was tested thoroughly by Chen



Chinese Navy-built Chi-1 named "Chiang Hung".



The Java ("Java-1") built by the Capital Aero Factory in Nanking.

Wen-lin and Hans Bertram and after the official tests it was flown from Fuchow to Amoy and back. Chi-2 was named "Chiang Yen" and left the workshops in August 1930. Chen and Bertram planed to fly from Amoy to Singapore in the second aircraft, but these plans were never realised.

The Naval Air Establishment moved to Shanghai in February 1931. In October the same year Keng-1 "Chiang Ho (Hao)" and Keng-2 "Chiang Feng" were completed and successfully tested, the first one on 5 October. A German pilot named Brill flew it for the first time over Shanghai on 13 June and he and Y K Tseng made a tour with it up the Yangtze River later the same month. It made a forced landing at Hankow, however, but was repairable[3].

The aircraft acquired from Japan for the "Ning Hai" cruiser in 1932, the Aichi AB-3, had non-folding wings and had to be dismantled before stowage on board the ship. A new aircraft intended for carriage on the cruiser was built in Shanghai and completed in December 1933 (or July 1934). The **Hsin (Xin)** (130 hp Jimpu) was a single-seat float-equipped reconnaissance biplane and it carried the same name as its forerunner and as the mother ship, "Ning Hai". Although designed by Mar Te-tsu, it was rather similar to the Aichi AB-3, but had folding wings.

Two naval DH 60 Moth trainers, "Chiang Chun" and "Chiang I (Yi)" were rebuilt in Shanghai in 1932 and June 1934, respectively.

Dimensions and Weights for Aircraft Built by the Navy

Type	*Span*	*Length*	*Height*	*Weight empty*	*Weight loaded*
Chia I	11,5 m				998 (1,093) kg 953 kg
Ping	17.1 m	11.9 m	5.1 m		2,950 kg
Wu	10.8 (10.4) m	7.9 m	3.75 m		907 (925) kg
Ting	14.0 m	11.2 m	5.3 m		2,405 kg
Chi	10.87 m	8.33 m	3.55 m	740 kg	1180 kg
Keng	9.83 m	8.24 m	3.3 m	754 kg	1,116 kg
Hsin	9.2 m	7.0 m	2.96 m	645 kg	817 kg

Fu-hsing AP-1

The Shiukwan Aircraft Works owned by the Canton Government became operational in August 1935. Preliminary design of a two-seat trainer, initially intended for a 285-400 hp engine was started by C L Zakhartchenko in Canton late in 1934. In April 1935 materials for a batch of 20 aircraft with 450 hp Wright R-975-E3 Whirlwind (later 785 hp Wright SR-1820-F53 Cyclone) engines were ordered. The aircraft was called the **Fu-hsing** (Revival). The first example was completed and test flown by C H Day on 20 May 1936 and on 22 May it was flown to Canton for demonstrations. Further testing was made by H Y Bim.

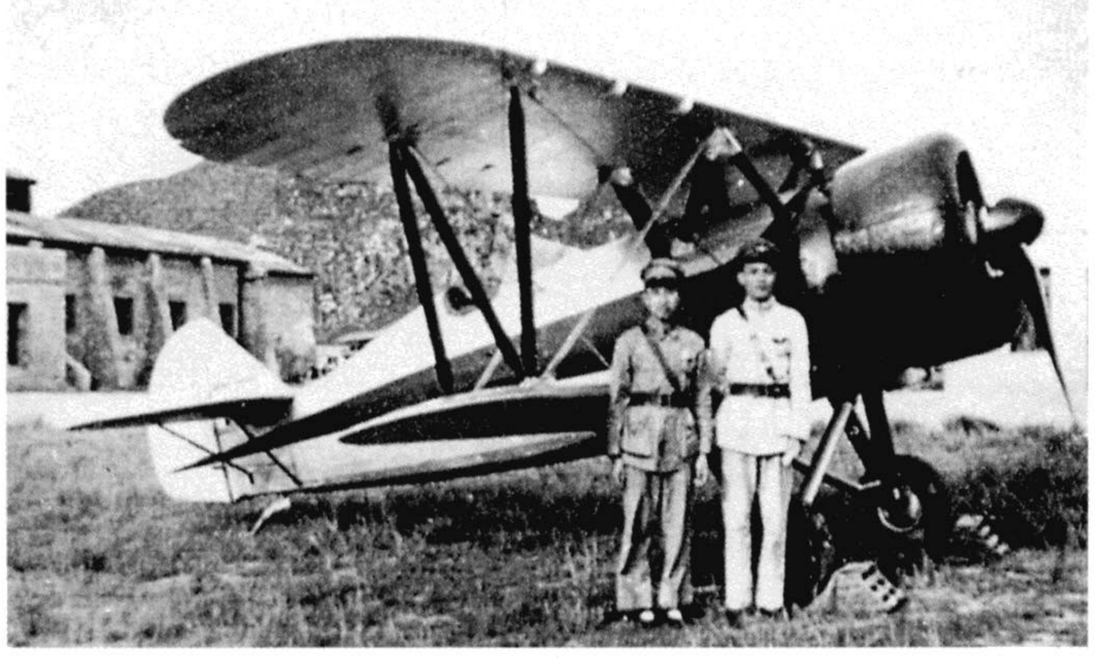
Initial production plans included ten advanced trainers and ten examples of an armed multi-purpose version. In

Dimensions, Weights and Performance of the Fu-hsing

Type	*Span*	*Length*	*Height*	*Weight empty*	*Weight loaded*
Fu-hsing AP-1	9.45 m	7.25 m	2.82 m	985 kg	1,634 kg

	Speed	*Climb*	*Ceiling*	*Range*
Fu-hsing AP-1	288 km/h	482 m/min	6,462 m	1,577 km
Fu-hsing AP-2	295 km/h	567 m/min	7,040 m	1,319 km

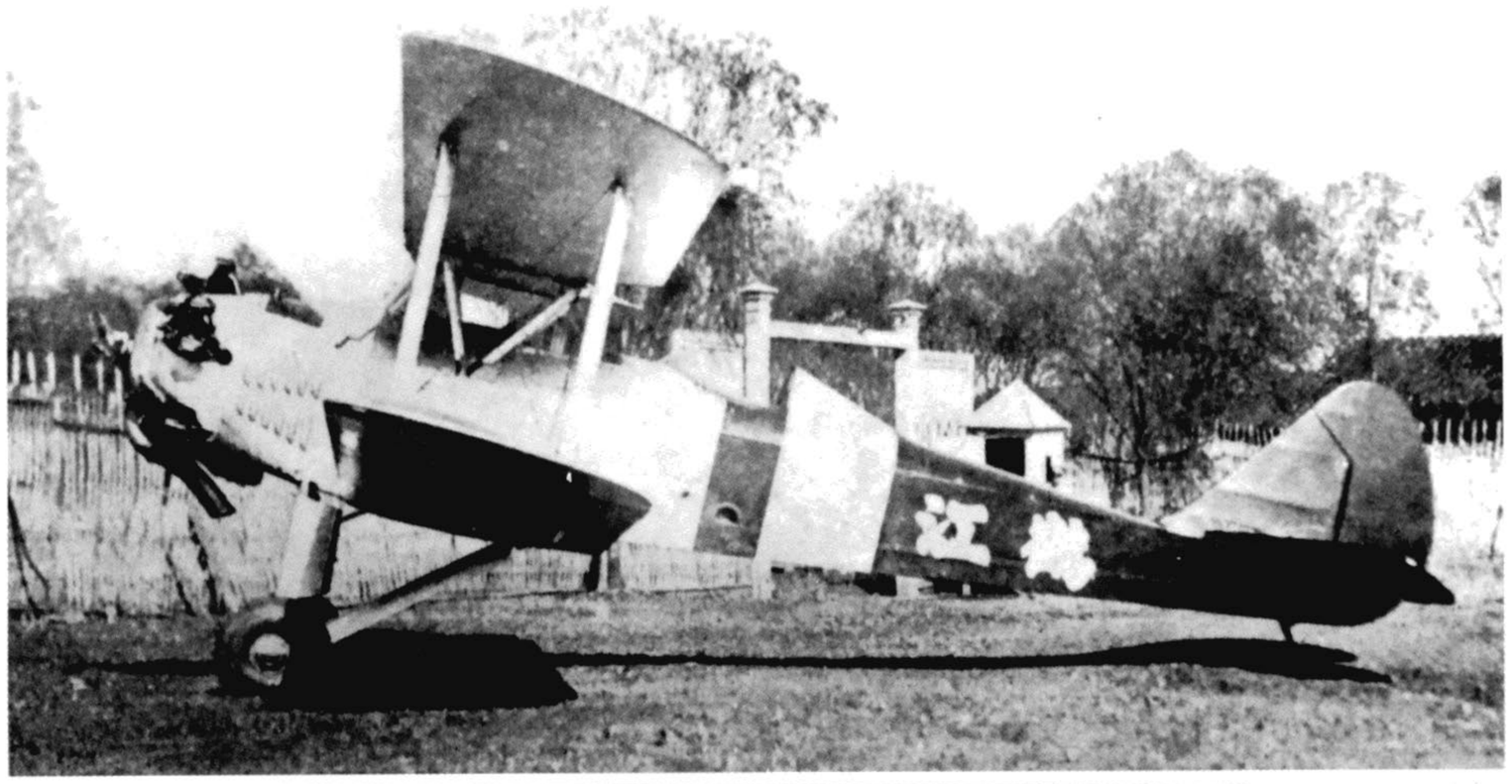
3 According to "The History of Chinese Aviation" a Keng-3 was built in 1935, but this information has not been confirmed.



Kwangsi Type 3 fighter.

August 1936 Fu-hsing production plans were changed to comprise 20 advanced trainers called the Hsin (New) Fu-hsing 1, of which 15 were to be fitted with camera and armament. In the end only one (c/n 6) was fitted with a camera. Work was suspended in January 1937 after delivery of the first five aircraft and was not resumed until September. As no synchronisation gear was available, guns were mounted over the wing to fire outside the propeller disc. Completion of the last eight aircraft was delayed due to the evacuation of the factory to Kunming.

In April 1940 work began on the redesigned **Hisn Fu-hsing 3 (AP-2)**, which was to be built from local materials (plywood), and construction of a prototype was started. Four examples of this type were apparently built during the war. It was intended as a primary trainer.



Chinese Navy-built aircraft: Keng "Chiang Hao" (top) and Hsin "Ning Hai".

Fu-hsing Production

C/n	Delivered	To	Remarks
1	9.9.36	Kwangtung 1st Army	
2	26.9.36	Nanchang	
3	17.12.36	30th Squadron	
4	17.12.36	30th Squadron	
5	8.1.37	30th Squadron	
6	23.12.37	Hengyang Gunner School	Guns, bomb racks, camera
7	30.1.38	33rd Squadron, Hengyang	Guns, bomb racks
8	18.2.38	33rd Squadron, Hengyang	Guns, bomb racks
9	7.4.38	33rd Squadron, Hengyang	Guns, bomb racks
10	7.4.38	33rd Squadron, Hengyang	Guns, bomb racks
11	7.6.38	Wuchang Air Transport Sq	Guns, bomb racks
12	19.7.38	12th Squadron, Hankow	Guns, bomb racks
13	25.6.40	Chengtu Aviation School	Single gun
14	7.9.40	Chengtu Aviation School	Single gun
15	7.9.40	Chengtu Aviation School	Single gun
16	11.10.40	Chengtu Aviation School	Single gun
17	10.12.40	Chengtu Aviation School	Single gun
18	28.12.40	Chengtu Aviation School	Single gun
19	8.1.41	Chengtu Aviation School	Single gun
20	14.1.41	Chengtu Aviation School	Single gun, plywood wings

(Source: Gerry Beauchamp in Air Classics, September 1977)

Java

In May 1932 the Capital Aero Factory in Nanking was given money collected by overseas Chinese in Batavia, Indonesia, for the purchase of a fighter aircraft. No aircraft was purchased but instead a two-seat biplane with 525 hp Hornet engine was developed by a design team headed by T'ien P'ei-yeh, Chu Cha-jen and Chiao K'ung[4]. About 100 personnel started construction in December 1933 and in June 1934 the aircraft was completed. It was initially named "Batavia Overseas Chinese", but this was later changed to "Java-1". A ceremony was held on 15 December 1934 to dedicate this aircraft to the CAF. Weight loaded was 2,363 kg, maximum speed, 238 km/h, ceiling, 5,170 m and range, 943 km.

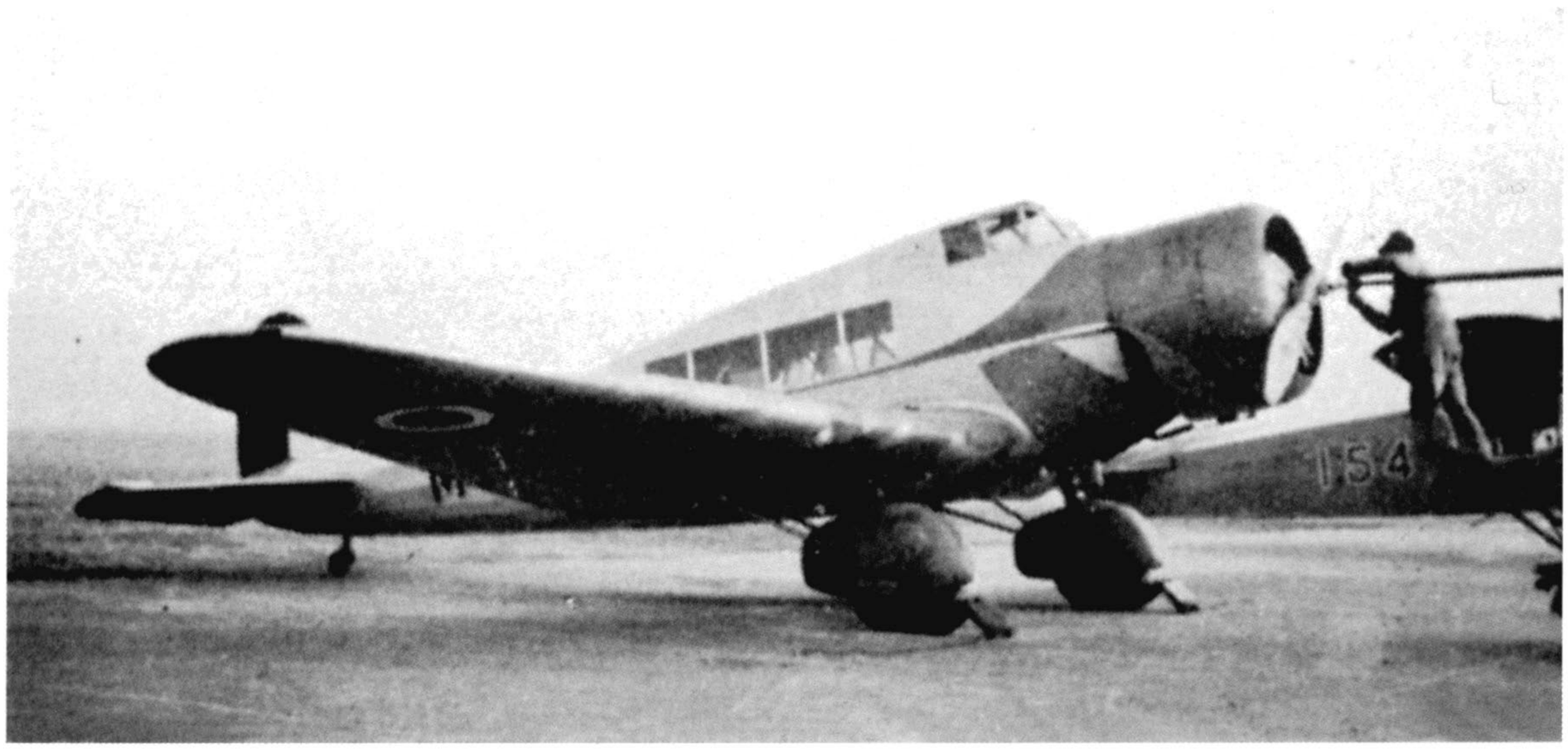
Kwangsi Types

The Kwangsi Mechanical and Aircraft Factory at Liuchow built a few indigenous types entirely with Chinese labour and material. The **Type 1** (105 hp Cirrus Hermes II) was a single-seat parasol monoplane designed by Captain Chee (Chu Jeng-chang). It was first flown in July 1933 by FEACo pilot A V Harvey.

Very little is known about the **Type 2** (260 hp AS Cheetah IIA), said to be a two-seat reconnaissance-bomber or trainer. A prototype might have been built in 1936, but this type was more likely just a project.

The **Type 3** (260 hp Armstrong Siddeley Cheetah IIA)

4 According to other information this aircraft was designed by Colonel Y P Shih (Ernest Shih) and its engineering and construction was supervised by Colonel Liu Ching-yi.



Manko MT-1 Hayabusa built in Manchukuo for the MKKK. Behind is a Manko 1 Type, a copy of the Fokker Super Universal.

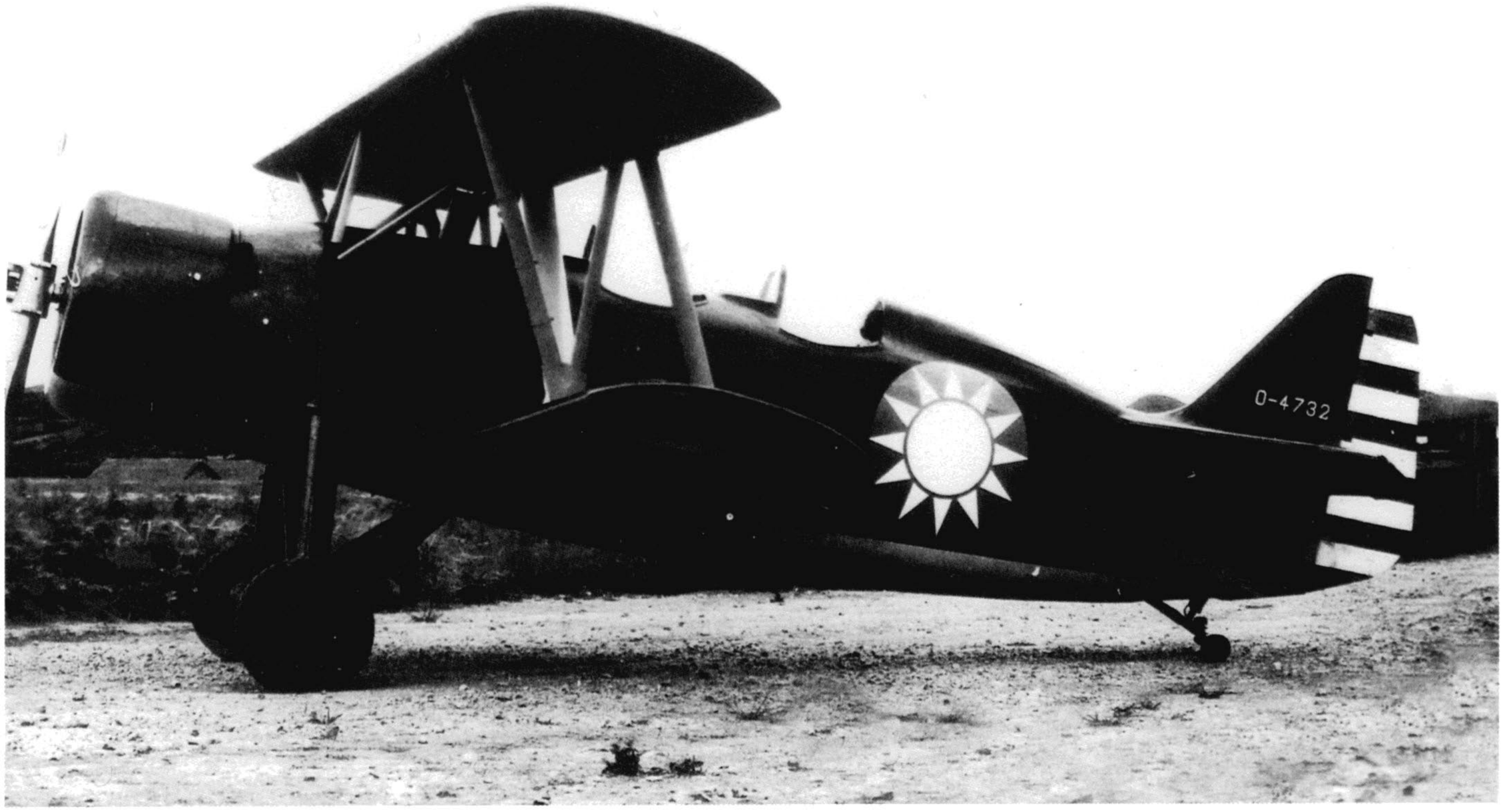
was a single-seat fighter biplane designed by factory director Chu Jeng-chang. It was completed and tested in July 1937. It was later named "Chu Jeng-chang" after its designer and delivered to 32nd Squadron, CAF. Dimension: Span 8.0 m, length 6.25 m, height 2.5 m. Weight empty 760 kg, loaded 1,045 kg. Maximum speed 285 km/h.

Manko and Manshu Types

Japanese-controlled Manshu Koku KK (Manko) at Mukden had begun to build aircraft under licence in 1934. Under the supervision of Goro Tominaga Hajime Hayashi started to design a new type intended to replace the Fokker Super Universal. The first prototype of the **MT-1 Hayabusa** (460-570 hp Nakajima Kotobuki 2-kai-1) was completed in December 1936. It was a single-engined seven-place passenger transport monoplane. The first flight of the new aircraft took place in April 1937. A total of 35 was reportedly built and Nihon Kokusai Koku Kogyo KK (Japan International Aviation Industry Co, Ltd) produced another 15-20 for China Airways Co Ltd. There were three different versions: the Hayabusa 1, 2 and 3 Type.

The **MT-2**, also designed by Hajime Hayashi, was a

German Franz Oster in front of the aircraft built by him for the Shantung Government.



Production of the Fu-hsing was started at the Shiukwan Aircraft Works in Kwangtung and later continued at Kunming.

single-engine five-place cabin monoplane (250 hp Menasco C6S), which was built and tested in the summer of 1938. It was very similar to the French Caudron Simoun. The Messerschmitt Bf 108 Taifun was adopted instead of the MT-2, however.

Obre

See under Peking Types (Nanyüan Factory)

Oster

German engineer Franz Oster was employed by General Pi Shu-chen of the Tsingtao Iron Works, later the 4th Arsenal, as technical advisor and engineer for the period 1 June 1926 to 15 February 1928. He was asked by the Shantung Government to build an aircraft and allegedly acquired drawings from the Caspar firm in Germany. Construction started in April 1927 and on 16 December the aircraft was finished. A 230-hp BMW engine and German instruments were fitted, otherwise Chinese materials were used. The aircraft was a biplane and had two twin cockpits with four seats. Estimated length was 8 m and span 12 m. The Chinese characters for "Made in Fourth Shantung Arsenal" were painted on. The aircraft was sent by rail to Tsinan for testing on 25 December, but it was apparently never flown. The pilots refused to fly it, as it was considered too much overweight.

Peking Types (Nanyüan Factory)

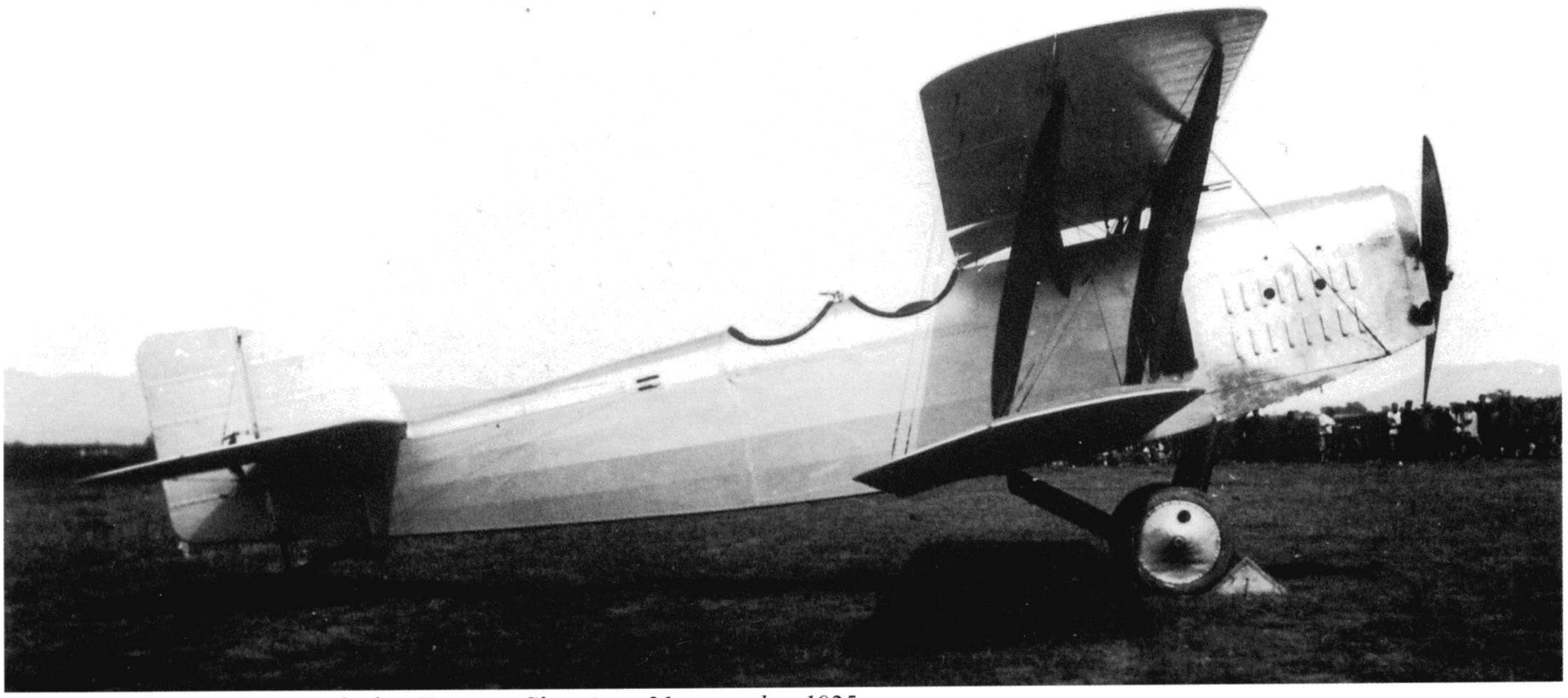
The Nanyuan repair workshops headed by Pan Shih-chun built a number of aircraft, although the details are somewhat sketchy. A monoplane (50 hp Gnome) designed by French chief mechanic and pilot Emile Obre was built in 1913 and completed in November. A number of two-seat biplanes with American Gyro engines, possibly as many as 14, were built between 1916 and 1918. They were named the Pan Shih-chun Type, after the manager/designer of the workshops.

Four 90 hp and ten 110 hp Gyro engines were imported in 1916 and by October 1918 three 90 hp tractor and three 110 hp pusher aircraft had been constructed. One more of each type was about to be completed and others were under work, but it is not known if all the planned ten 110 hp pushers were completed. At least one pusher was fitted with an 80-hp Gnome engine taken from a crashed Caudron. There is a photo in Jane's All the World's Aircraft for 1919 of this machine, which shows an aircraft very similar to the Farman HF type. It was fitted with a flexible forward-firing Hotchkiss machine gun.

Schoettler

The German firm Buchheister & Co set up an aircraft factory at Lunghua for Shanghai-based General Lu in 1922. German engineer Ferdinand Schoettler designed a two-seat biplane powered by the 160 hp Mercedes, the **Schoettler I**, which was completed in August 1923 and flown by Major W E B Holland.

Schoettler left for Taiyüan in Shansi in 1924 and took up his work again there. Yen Hsi-shan wanted an aircraft



The Schoettler B 3 photographed at Taiyüan, Shansi, on 21 september 1925.

factory and had signed a contract with Captain E E Fresson, who hired Schoettler. Engines, parts and materials were purchased from the Aircraft Disposal Company in England.

The **Schoettler B3** (B III), a two-seat training biplane (150-160 hp Beardmore), was the first type built. It was flown for the first time on 21 September 1925 by Ernst van Vloten. The **Schoettler S4** trainer (150-160 hp Beardmore) was very similar to the B3 and was completed in the summer of 1926. It was planned to build four **Schoettler C5** reconnaissance aircraft (Renault 12-FER), but this was never realised. In January 1926 there were five 300 hp Renault and three 110 hp Rhone engines, imported by Boixo, and a single 160 hp Beardmore in store at Taiyüan.

Dimensions and Weights for the Schoettler Types

Type	*Span*	*Length*	*Height*	*Weight empty*	*Weight loaded*
I	12.04 m	8.35 m	3.15 m	744 kg	1,160 kg
B3 and S4	12.1 m	8.85 m	3.0 m		

Yang Ch'eng

In 1928 the aircraft factory belonging to the Canton Aviation Department completed its first aircraft, a three-seat biplane (90 hp Curtiss OX-5), which was first flown on 29 December. It had probably been designed by the factory's Chief Engineer Lam and was named "Chengkung" (Success). Several machines of different types were completed in Canton between 1929 and 1937, and all were called Yang Ch'eng ("The City of the Five Rams", an ancient name for Canton).

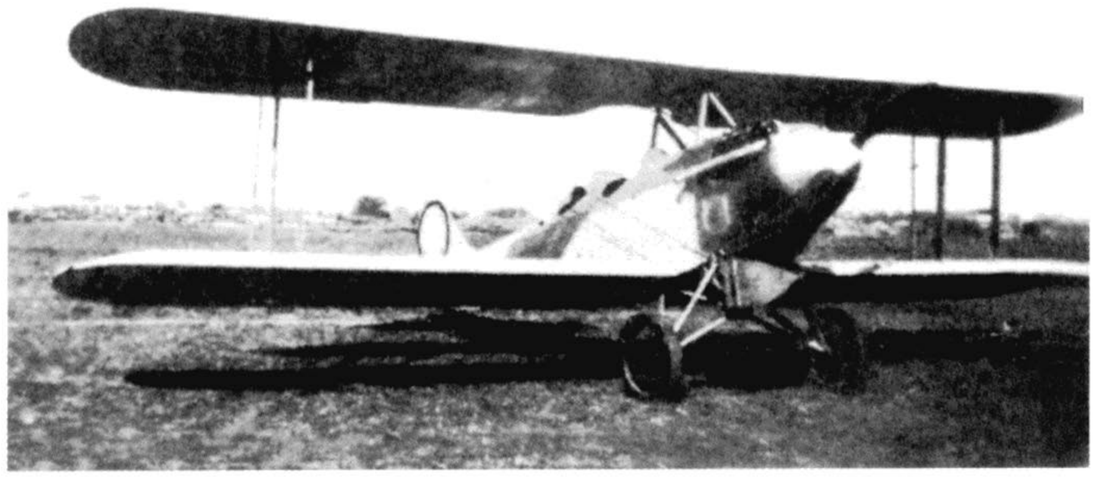
Four were built in 1929 (Yang Ch'eng 51-54), followed by another four in 1930 (Yang Ch'eng 55-58). Yang Ch'eng No 53, a two-seat trainer, had a 180 hp Hispano Suiza engine, while No 56 and 57 had 200 hp Pratt & Whitney Wasps and were armed with rearward-firing machine guns. A total of 22 aircraft, mostly observation and training biplanes, had been built by the beginning of 1933. Four Avro Avian copies (Yang Ch'eng 70-73) were completed in May 1933.

In the spring of 1934 an aircraft based on the Douglas O-2MC (Yang Ch'eng 74) was completed. It left the factory on 16 March 1934 and was followed by four more (Yang Ch'eng 75-78). The construction of these aircraft had started in July 1933. At least one example was built in 1935 of another type related to the Douglas O-2MC. It had a different tail unit and was designed as a prasol wing aircraft.

A series of six two-seat light bombers (Pratt & Whitney Wasp), similar to but smaller than the Corsair, was ordered as well, and a single-seat fighter (300 hp Wright Whirlwind) was built, but little is known about these types. The total number of Yang Ch'engs is said to have been over 60.

Dimensions and Weights of the Yang Ch'eng Types

Type	*Span*	*Length*	*Height*	*Weight empty*	*Weight loaded*
Chengkung (1928)	9.75 m	7.32 m	2.67 m	950 kg	1,360 kg
Yang Ch'eng 53	9.82 m				1,089 kg
Yang Ch'eng 56	10.98 m	8.30 m	3.10 m	793 kg	1,497 kg
Yang Ch'eng 57	9.82 m				1,497 kg
"Corsair Type" (1934)				725 kg	1,139 kg



Canton-built "Yang Ch'eng" No 53.

Miscellaneous Types

In September 1931 it was reported that the "Shanghai Airplane Factory" has constructed an aircraft equipped with an engine from an automobile. Chang Tien-fu (Fu-tien?), Director of the Automobile Study and Research Compilation Association, had built it. It is not known if it ever flew. The engine was probably a 23-hp Russel Henderson motorcycle engine.

Colonel Yuan Pao-kwang, Chief Mechanic of the Hangchow Central Aviation School, completed an observation aircraft "of the same type as the Moth" at the end of 1931. In January it was reported that it was to be flown shortly, but it is not known if it ever came off the ground.

In 1934 Mao K'e-sheng of the "Yünnan Aero Factory" designed and built a light low-wing monoplane (100 hp 5-cylinder air-cooled American engine). Its weight was 740 kg, maximum speed 160 km/h, and ceiling 6,300 m. Chang Chih-kao, Assistant Chief of the Yünnan Aviation Bureau, probably test flew it.

After several years of work a two-seat biplane (200 hp Wright Whirlwind) designed by Chu Cha-jen was completed at Suchow. It was built on private initiative. After completion it was test-flown by Lo Chi on 18 May 1937 and was named "Suchow". Plans to build further examples of this type were thwarted by the outbreak of war in 1937.

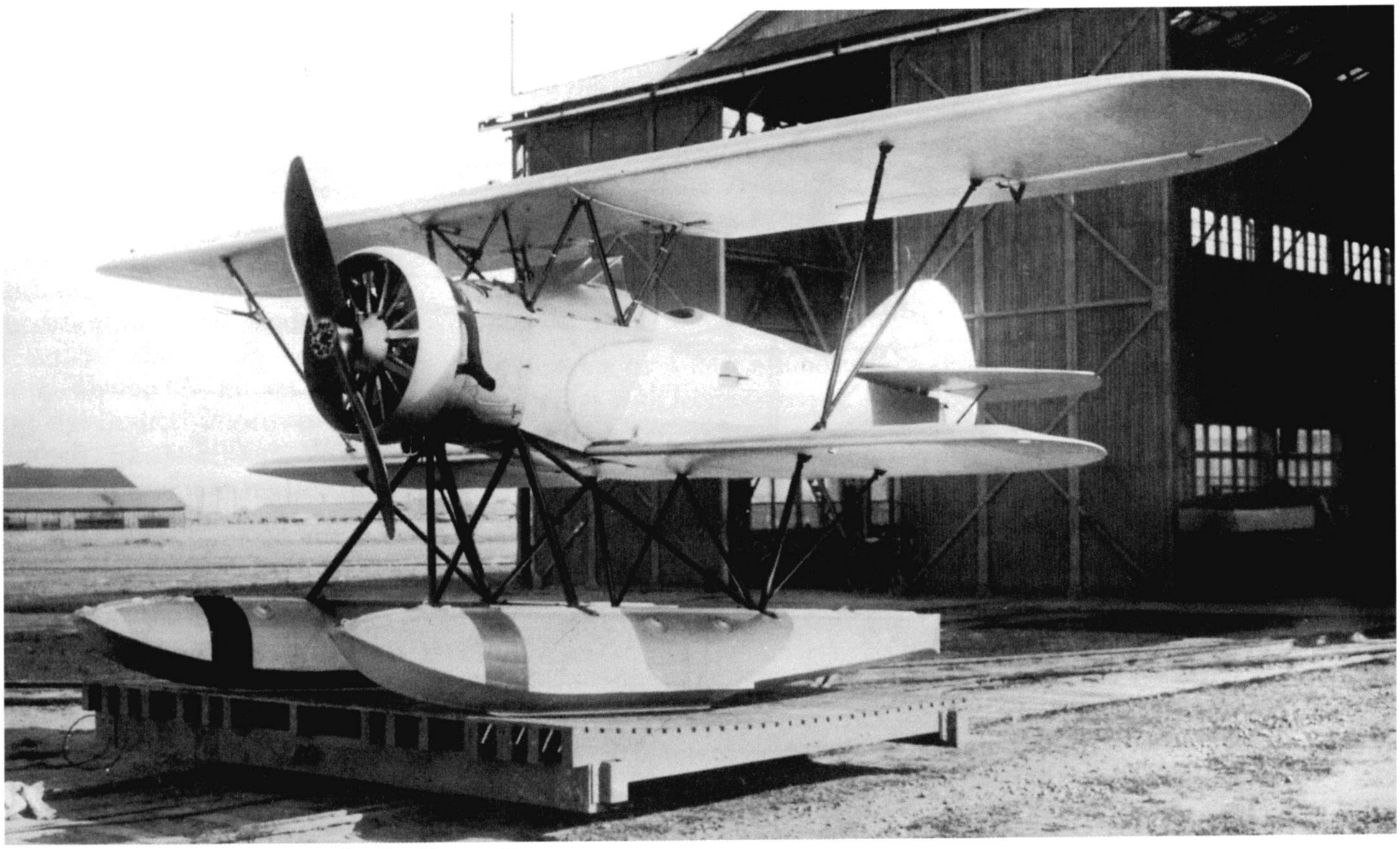
The No 1 Aircraft Factory in Canton was originally to have built the Chung Shan advanced training monoplane, but since evacuation of the factory to Kunming no materials were available. Some work on the wing assemblies for the Chung Shan went on and experiments were made with plywood wing covering from materials manufactured in Chengtu. The Chung Shan prototype was still not completed by September 1940.

In 1943 the Yench'ü (Experimental Pursuit, XP-1) (Wright Cyclone) single-seat fighter prototype was completed. Its design was started by C L Zakharchenko as the D-2 in 1942 and featured an inverted gull wing layout. It crashed during the first test flight in the autumn of 1943. The more conventional XP-0 was more successful and two of this fighter were completed in 1944, two in 1945 and five in 1946. In 1948 a helicopter designed by Chu Jia-chen was built.

The No 2 Aircraft Factory at Nanchwan built a pair of twin-engine transport aircraft prototypes in 1944-46: the Chung Yun-1 (Wright Cyclone) and Chung Yun-2 (Pratt&Whitley Wasp Junior).

The Yench'ü (XP-1) single-seat fighter prototype was built by the No 1 Aircraft Factory, but crashed during its first flight..

Foreign Aircraft Types Used in China until 1941



Aichi AB-3 acquired from Japan for the Chinese Navy.

Aeromarine

The **Aeromarine 39B** (100 hp Curtiss OXX-6) was a two-seat biplane that could be fitted with wheel or float undercarriage. Canton was reported to have a number of Aeromarine aircraft (See Canton chapter), but it seems probable that some of them, if not all, were in fact Curtiss N-9Cs. The Macao Aerial Transport Co imported three for their use in March 1920.

Aichi

The **Aichi AB-3** (130-150 hp Gasuden Jimpu), a single-seat twin-float reconnaissance biplane, was ordered by the Chinese Navy together with a small warship that was built by the Harima Shipyard in Japan. The AB-3 had easily detachable wings for shipboard storage. It was completed in January 1932 and after test flights in February it was delivered to China. No further examples were built, but the "Ning Hai" built by the Chinese Navy at Shanghai was rather similar in appearance to the AB-3.

Airspeed

Two **Airspeed AS 6J Envoy III** (350 hp A S Cheetah IX) twin-engined eight-passenger transport monoplanes were acquired by Kwangsi from the FEACo. The first, G-AERT (c/n 68), was flown out to Hong Kong in January-February 1937 and was handed over at Kweilin. The second, G-AEXE (c/n 67), piloted by Captain G B S Errington, left Great Britain on 14 June 1937. It arrived in Hong Kong on 30 June and was delivered to Liuchow, Kwangsi, on 7 July.

Albatros

A number of German WW I aircraft was apparently acquired by Chekiang warlord Lu Yung-hsiang in 1922. Some of them were observed but they then disappeared mysteriously. They were reported to be "Albatros, LVG two-seaters and Pfalz aeroplanes". Four modern Albatros Scouts (of "post-war design") with 260 hp Mercedes engines were erected but the remainder were not unpacked. British Major Holland flew one of them and it was found to have a top speed of over 170 mph, and a span slightly less than the Albatros D V or C V.

Alexander

Two **Alexander Eaglerock A-2** (90 hp Curtiss OX-5) three-seat biplanes, c/ns 606 (US Reg 7196) and 616 (US Reg 7418), were shipped to China about September 1928 by the Pacific Commercial Co, San Francisco. They had been purchased by the Amoy Commercial Aviation School. Both were taken over by the Canton Air Force and were later assigned to the 5th Squadron with s/ns 505 and 506. US Reg 7418 was first numbered 112 and marked with the name "Fu chien min yung hang k'ung hsüeh hsiao" (Fukien People's Aviation School).

American Eagle

American Eagle representatives L E Gale & Company, Hankow, imported an **American Eagle A-129** (100 hp Kinner K-5) three-seat biplane for demonstrations in March 1929. The aircraft, c/n 334 (US Reg 340), was sold to Szechwan and delivered there in October. One example of the **Eaglet** (30/45 hp Szekely SR-3 or 50h p Continental A-50) two-seat high-wing monoplane was obtained by the Canton Air Force in the early 1930s. By 1933 it belonged to the 4th Squadron and had s/n 408.

Ansaldo

In 1920 an Italian Rome-Tokyo flight with seven Ansaldo SVA-9s, two Caproni Ca 3s, a Ca 4 and a Ca 5 passed through China and reserve aircraft were sent to Shanghai. The Italians left Rome on 26 February and reached Tokyo in May 1920, but one SVA 9, s/n 13157, had crashed at Canton and was left there. The **Ansaldo SVA 9** (220 hp SPA 6A) was a two-seat reconnaissance or training biplane. On 25 February 1921 one of the SVA 9s brought to China in 1920 was presented to the Government and placed in the Historical Museum at Wu Men Lao in Peking. Another example was constructed by a Mr Christiansen, Canton, from the spares left behind by the Italians and it is likely that the machine that crashed at Canton was used as well. This aircraft was sold to Yünnan in 1923, but crashed on its first flight.

In March 1920 the Japanese negotiated a loan to China of $15,000,000 to be used partially for purchasing Italian aircraft through the Japanese Okura Company. The deal was never put into effect, but contracts were apparently placed with Ansaldo. No aircraft were ever delivered.

Six **Ansalso A 300-4** (300 hp Fiat A-12) two-seat reconnaissance biplanes were purchased from Carlo Pestalozza of C:a Asiatica Importazioni ed Esportazioni by Chihli (Paoting Air Corps) in 1924. The first two were shipped in October, but the remaining four, shipped from Genoa on the SS "Pfalz" on 4 November, were seized by the British authorities at Colombo on 1 December. They were later released and shipped back to Italy on the SS "Trier" in April 1925. Those that arrived were taken over by Manchuria.

Several Armstrong Witworth AW 16 fighters were sold to China.

Arado

An **Arado SC II** (360 hp BMW Va) two-seat training biplane (possibly c/n 49) was shipped to China by Carlowitz & Co for demonstrations in June 1930. It was offered to Shansi, but in spite of demonstrations in Nanking by Welkoborsky and in Shanghai in December 1930 by Major von Doering it was not sold.

Armstrong Whitworth

An **Armstrong Whitworth FK 8** (160 hp Beardmore) two-seat reconnaissance and light bombing biplane was brought to Shanghai early in 1920 and used as a private aircraft by British Major W McBain.

Armstrong Whitworth was later represented by the FEACo and sold two types in China during the early 1930s, the AW 16 and the Atlas. The **AW 16** (490-510 hp A S Panther IIIA) was a single-seat fighter biplane. Three, c/ns AW 698, 720 and 721, were built for Reiss Massey & Co (agents),

Two examples of the Airspeed Envoy were delivered to the Kwangsi Air Force in 1937.

Avro 616 Avian IVM VR-HAA, the Hong Kong Flying Club's first aircraft.

and exported with CofAs dated 15 December 1931. C/ns 765-767, registered G-ABRH to 'J, received export CofAs on 19 December 1931. These six aircraft were delivered from Hong Kong to Canton in September 1931, October 1931 and January 1932. Then followed five aircraft that were registered in Hong Kong and delivered to Kwangsi and Canton:

Reg	C/n	Date	Cancelled
VR-HAZ	AW.797	2.6.32	26.10.32
VR-HBH	AW.818	19.7.32	19.11.32
VR-HBK	AW.798	9.8.32	26.10.32
VR-HBN	AW.819	21.10.32	21.11.32
VR-HBQ	AW.820	21.11.32	13.12.32

Three, c/ns 825-827, received CofAs in July 1932 and arrived in Hong Kong in September. They had been ordered by Honan for the Nanking Air Force and were delivered from Hungjao to Kaifeng on 19 October by Don Bennett of the FEACo and two Chinese pilots. Honan citizens bought two more AW 16s, c/ns 823 (test and demo aircraft G-ABZL) and 824. They arrived in Shanghai at the end of March 1933 and were delivered to Kaifeng at the end of May. They were finally handed over to the Nanking Air Force on 28 May. A last AW 16 (c/n 829) arrived in Hong Kong in May 1933 and was demonstrated during the British Empire Fair. It was then delivered to Nanking and paid for by subscriptions in Ningpo.

The **Atlas II** (515-535 hp A S Panther IIA) was a two-seat army co-operation biplane. The first six aircraft, c/ns 768-773 (G-ABRU to 'Z), were shipped in December 1931 and delivered from Hong Kong to Canton. Then followed three aircraft for Canton and three for Kwangsi (c/ns 799-804) that were registered in Hong Kong before delivery:

Reg	C/n	Date	Cancelled
VR-HAV	AW.799*	30.5.32	17.6.32
VR-HAX	AW.802	31.5.32	13.6.32
VR-HBA	AW.800	13.6.32	22.8.32
VR-HBD	AW.803	30.6.32	7.7.32
VR-HBE	AW.801	6.7.32	15.7.32
VR-HBG	AW.804	16.7.32	29.7.32

* AW.799 was apparently sent to Great Britain for repairs and was then re-registered to the FEACo as VR-HCD on 22.6.33. It was cancelled on 19.10.33

A final pair of Atlases reached China in 1934 and were probably delivered to the Nanking Air Force:

Reg	C/n	Date	Cancelled
VR-HCQ	AW.821	21.6.34	5.7.34
VR-HCR	AW.822	21.6.34	5.7.34

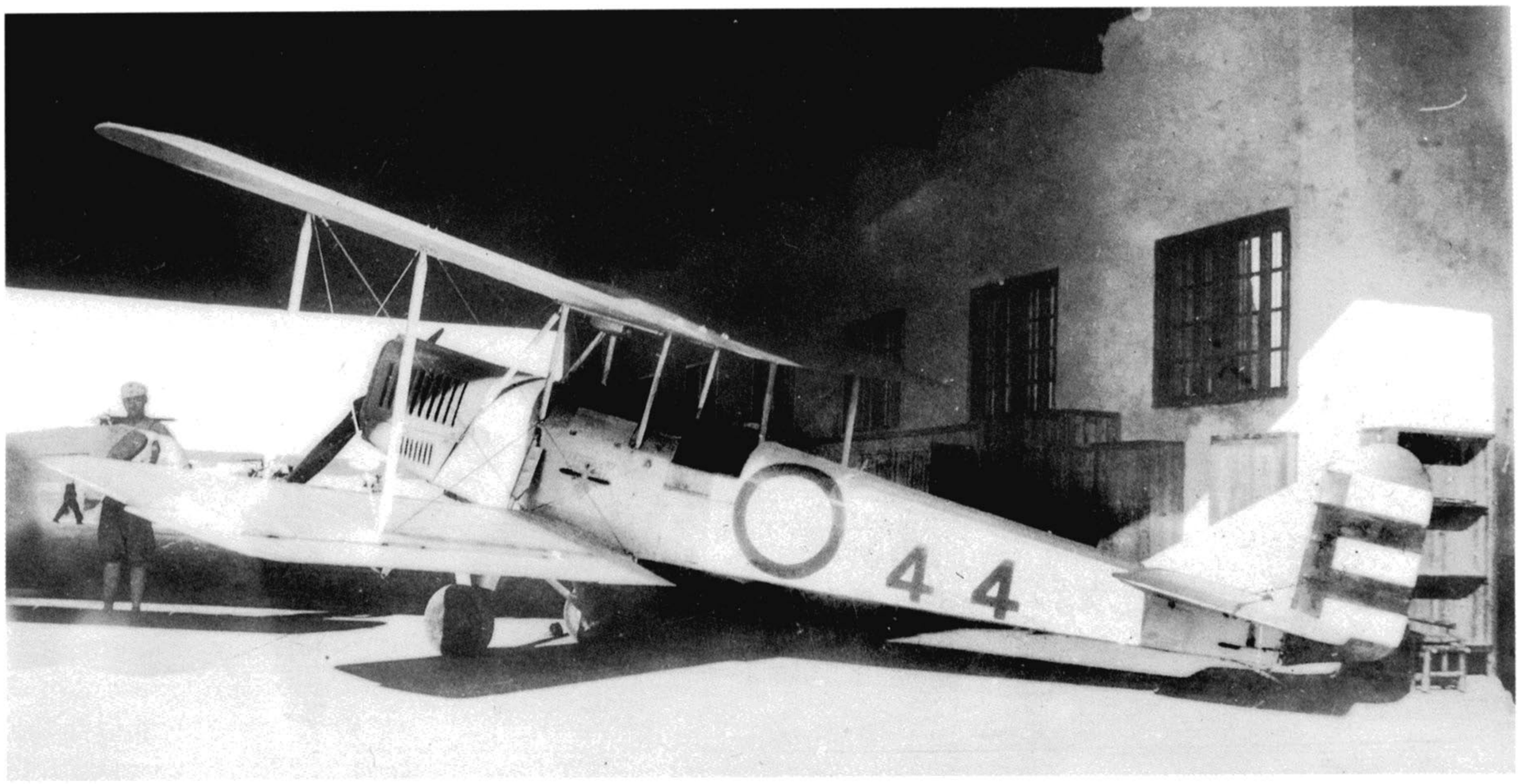
The 34th Squadron, CAF, was organised at Liuchow with Atlas aircraft in December 1937 and was active until April 1938.

Arrow

Wallace Harper visited Kunming in Yünnan and managed to sell six **Arrow Sport Pursuit** (100 hp Kinner K-5) two-seat biplanes in May 1931 using an aviation magazine as a prospect! He went to the US to arrange for the delivery and persuaded the Arrow Company to provide an extra aircraft (c/n 435, NC821M) for use as a demonstrator in Hong Kong. James Fisher accompanied the aircraft to Yünnan in April 1932 to assemble and test fly them. Harper formed the American Eastern Aviation Co and made demonstrations with the Arrow in Hong Kong from May 1932. It was later sold to Canton.

Avia

The Czech Avia Company was represented in China by the Skoda Works, Shanghai. An **Avia Ba 33** (450-500 hp Skoda L) single-seat fighter biplane (c/n 1020) was sent to Mukden for demonstrations. It was shipped to Newchwang on 17 March 1930 and on 12 June it had been assembled at Mukden by Avia mechanic Vacek and was test flown by Cestmir Hanus. On 5 October a comparison test was made



Avro 626 Avian IVM in the markings of the Kwangsi Air Force.

against the Dewoitine D 27 and the Letov S.131. No orders were booked, however, and the aircraft was disassembled and stored under bond in a hangar. When the Japanese arrived in September 1931 they seized it and on 1 October they took it out, assembled it and painted Japanese national insignia on. It was used by the Imperial Japanese Army Air Force for observation and ground-attack and after repeated Czech protests the Japanese finally paid for it on 17 March 1933.

Avro

The Central Garage Company, Shanghai, purchased an Avro 504K training biplane, which, according to the invoice dated 30 July 1920, was sold via Probst, Hanbury & Company, London. It was described as a three-seat Avro 504K with 80 hp Renault engine and was thus technically an Avro 548. It was detained in customs and was finally sold to German Schoettler in 1922 and possibly ended up in General Lu's Chekiang Air Force.

A large number of **Avro 504Ks** (Handley Page contract: 110 hp Le Rhone, Vickers contract: 100 hp Monosaupape) were sold to China. The Peking Government ordered six from Handley Page (ADC) and 20 from Vickers in 1919 and the Vickers contract was later increased to 60 aircraft. The first 18 received British CofAs on 10 March 1920 (E366, E368, E370, E373, E376, E377, E379, E380, E393, E397, E400, E409, E421, E9484, E9486, E9489, E9504, H9579) and two were intended as spares or instructional airframes. Deliveries were as follows:

Shipped	Ship	
10.3.20	Sado Maru	4 complete aircraft
24.3.20	SS Carmathenshire	10 engines
31.3.20	SS Nellore	4 complete aircraft
10.4.20	SS Carmathenshire	Parts, 2 engines
15.4.20	SS Delta	Parts, 1 engine
22.4.20	SS Gelngyle	Avro parts, fuselages
22.4.20	SS Karmala	Fuselages, engines
21.5.20	SS Gelntara	Fuselages

The first of these arrived at Nayüan in July 1920. The second batch of 40 aircraft arrived during the spring of 1921. These aircraft were later captured and used at Mukden, Paoting, Loyang, Kalgan and Tsinan. The Avro 504K was copied and built in small numbers at Peking, Mukden and Taiyüan, Shansi. At least one and possibly three Soviet-built U-1 copies of the Avro 504K (120 hp M-2) were delivered to Canton in 1926.

Avro was later represented by the FEACo, who succeeded in selling a large number of aircraft in China. The first ten **Avro 594 Avian IV** (90 hp ADC Cirrus III) two-seat trainer biplanes (c/ns 207-216) were sold to Canton via Boyd & Co in January 1929. They arrived in February and March. Four (c/ns 217-220) were purchased for the Navy at Amoy and one of these (c/n 220) was registered X-CRIA and named "Amoy", and flew from England to Shanghai in March-May 1929.

The **Avro 616 Avian IVM** (105 hp ADC Cirrus Hermes I and 110 hp Cirrus Hermes II) was a strengthened version with steel-tube fuselage. The FEACo imported two (c/ns 361 and 362) in January-February 1930 for demonstration purposes. They were registered in Hong Kong as VR-HAA and VR-HAB. The first was fitted out as a floatplane and was to have been demonstrated to the Navy at Fuchow, but was instead handed over to the Hong Kong Flying Club (HKFC) in March 1930. VR-HAB was sold to the HKFC as well and a third Avian, VR-HAE (c/n 475) was purchased by the Club in November. A large number of Avians were sold to different provincial air forces and one example, VR-HBR (c/n 612), was registered to FEACo pilot A V Harvey in December 1932.

Reg	C/n	Date	Cancelled
VR-HAD	465	25.9.30	30.12.31 as sold
VR-HAF	466	17.7.31	4.8.31 as sold
VR-HAG	494	17.7.31	4.8.31 as sold
VR-HAH	495	17.7.31	4.8.31 as sold
VR-HAI	554	5.1.32	13.1.32 as sold
VR-HAJ	555	5.1.32	13.1.32 as sold

VR-HAK	557	5.1.32	22.2.32 as sold
VR-HAL	556	5.1.32	22.2.32 as sold
VR-HAM	559	26.2.32	7.3.32 as sold
VR-HAN	560	26.2.32	25.7.32 as sold
VR-HAO	577	29.3.32	8.4.32 as sold
VR-HAP	578	29.3.32	8.4.32 as sold
VR-HAS	579	26.4.32	25.1.35 as sold
VR-HAT	580	26.4.32	5 or 7.5.32 as sold
VR-HBB	590	25.6.32	25.1.32 as sold
VR-HBC	591	25.6.32	6.7.32
VR-HBI	599	4.8.32	25.1.35 as sold
VR-HBJ	598	4.8.32	14.9.32
VR-HBL	601	31.8.32	25.1.35 as sold
VR-HBM	604	2.9.32	6.1.33
VR-HBO	600	21.11.32	6.1.33
VR-HBP	605	21.11.32	6.1.33
VR-HBS	602	14.2.33	19.10.33
VR-HBT	603	14.2.33	19.10.33
VR-HBU	611	14.2.33	19.10.33
VR-HBV	608	22.2.33	19.10.33
VR-HBW	609	22.2.33	19.10.33
VR-HBY	610	9.3.33	19.10.33
VR-HCB	616	6.6.33	19.10.33
VR-HCC	617	6.6.33	19.10.33
VR-HCF	615	20.7.33	19.10.33
VR-HCG	614	20.7.33	19.10.33
VR-HCJ	619	28.10.33	14.11.33
VR-HCK	618	28.10.33	16.11.3

In addition c/ns 469-471 were delivered about July 1930, probably to Canton, c/ns 534-535 (possibly also c/n 533) in 1931, possibly to the Navy, and c/ns 563-568 early in 1932, probably to Canton.

Avro pilot H A Brown test flew the following Chinese Avian IVMs in Great Britain: "China" No.1 (July 1930), No.4 and No.5 (February 1931), No.6 (no date), "Far East" No.1 and No.2 (September 1931), and No.3 and No.4 (November 1931). The first of these to arrive was VR-HAD (c/n 465), registered in September 1930, which was used as a demonstrator. In October it was flown in Canton by A V Harvey and it was later shown at Amoy, Fuchow, Shanghai and Nanking, where it also participated in an air pageant on 2 May 1931.

Three Avians were sold to Canton in 1930 and three in July 1931. In 1932 six were sold to Canton, twelve to Kwangsi, six to Changchow, Fukien, and three to the Navy at Amoy. Three Avians were acquired by General Tan Kwok Wei at Chüanchow, Fukien. Further aircraft were sold to the Fukien Government, which received a total of at least 12. A new demonstrator (c/n 613) arrived about May 1933 and was shown in Shanghai and at Kaifeng, Honan. It was later sold to Tu Yüeh-shen, who presented it to Sun T'ung-kang in Shanghai on 18 March 1934. It was named "Yüeh Hui" and was probably brought to Tsinan, Shantung.

The Avian was built under licence, both at Liuchow, Kwangsi, and in Canton, where four were completed in May 1933. The Liuchow factory built 15 in 1934-35.

About October 1930 the FEACo imported a two-seat **Avro 621 Trainer** (215 hp AS Lynx) (c/n 464). They had applied for a permit to demonstrate this aircraft in Canton, but it was instead sent to Mukden, where it arrived on 5 November. It was test flown by A V Harvey on 8 November and demonstrated for the first time on the 23rd. It was probably this aircraft that force landed at Choushuitzu aerodrome, Darien, on 23 February 1931 on its way from Mukden to Tientsin. On 2 May it participated in the air pageant in Nanking.

Five Avro 621s were ordered by Manchuria in April 1931 and one, probably the demonstrator, was sold to Kwangsi. Avro pilot H A Brown test flew the following Chinese Avro 621 Trainers at the factory: "Kwangsi Air Force" No.1 (August 1930), and No.4 (July 1931). The "No.4" was almost certainly No 4 of the Manchurian order. The Manchurian aircraft (c/ns 512-516) arrived at Chingwangtao in September 1931, just as Japan was occupying Manchuria, and were stored there. They were still stored by June 1933 and it is not clear if they were ever delivered.

It seems that two Avro 621s had in fact reached Mukden, because the Japanese seized two Avro aircraft belonging to the FEACo there. One of them was definitely an Avro 621. Their "marks and numbers" were painted over with Japanese markings and they were used by the JAAF for a short while. One was damaged and the other was destroyed in a hangar fire on 30 August 1932. Japan finally decided to settle FEACo's outstanding claims and paid for the aircraft in June 1933.

The Avro 621 was modified into the **Avro 626 Advanced Trainer** (215 hp AS Lynx IVC) and five of this type were ordered by Manchuria in April 1931. All 10 Manchurian Avros were to be equipped with bomb racks, photographic equipment and mounts for Lewis machine guns. The Avro 626s (c/ns 517-521) were delivered with the Avro 621s in September and were stored at Shanghai. Their fate is not known. Eight more Avro 626s were imported:

Reg	C/n	Date	Cancelled
VR-HAU	569	19.5.32	17.6.32
VR-HAW	570	30.5.32	15.7.32
VR-HBZ	620	8.5.33	19.10.33
VR-HCA	634	8.5.33	19.10.33

In addition, c/ns 571-574, of which c/n 571 was registered VR-HBX on 6.3.33 (cancelled 19.10.33) and 573 became VR-HCO on 19.2.34 (for Far East Flying Training School).

The FEACo sold two to Kwangsi (probably c/ns 569 and 570) and four to Changchow, Fukien, (possibly c/ns 571-574) in 1932. One was demonstrated at Hangchow early in November 1932, but no orders were received from the Naking Air Force. This might have been c/n 571, which for some reason was returned to FEACo and registered in Hong Kong. The Fukien Air Force was reported to have received six Avro 626s (possibly c/ns 571-574, 620 and 634). One (c/n 573) was sold to the Far East Flying Training School in Hong Kong.

The **Avro 637** (260 hp AS Lynx Major/Cheetah V) was built both as an armed three-seat "light bomber" and as a two-seater. Both types were sold in China. One example (c/n

665) was shipped to Shanghai by the FEACo. It arrived in October 1933, but was not released from customs until in February 1934. It was demonstrated at Hungjao aerodrome on 17 February by A D Bennett. It was later shown at Hangchow and once again at Hungjao on 24 July. G S Jones-Evans later flew it to Yünnanfu via Liuchow in Kwangsi for further demonstrations.

Six Avro 637s were delivered to Kwangsi late in 1933 (probably c/ns 635-637 and 662-664). One, possibly the demonstrator, was sold to the Commission on Aeronautical Affairs in Nanking. It is possible that three were delivered to the Fukien Air Force, but this has not been confirmed. The following are known to have gone to China:

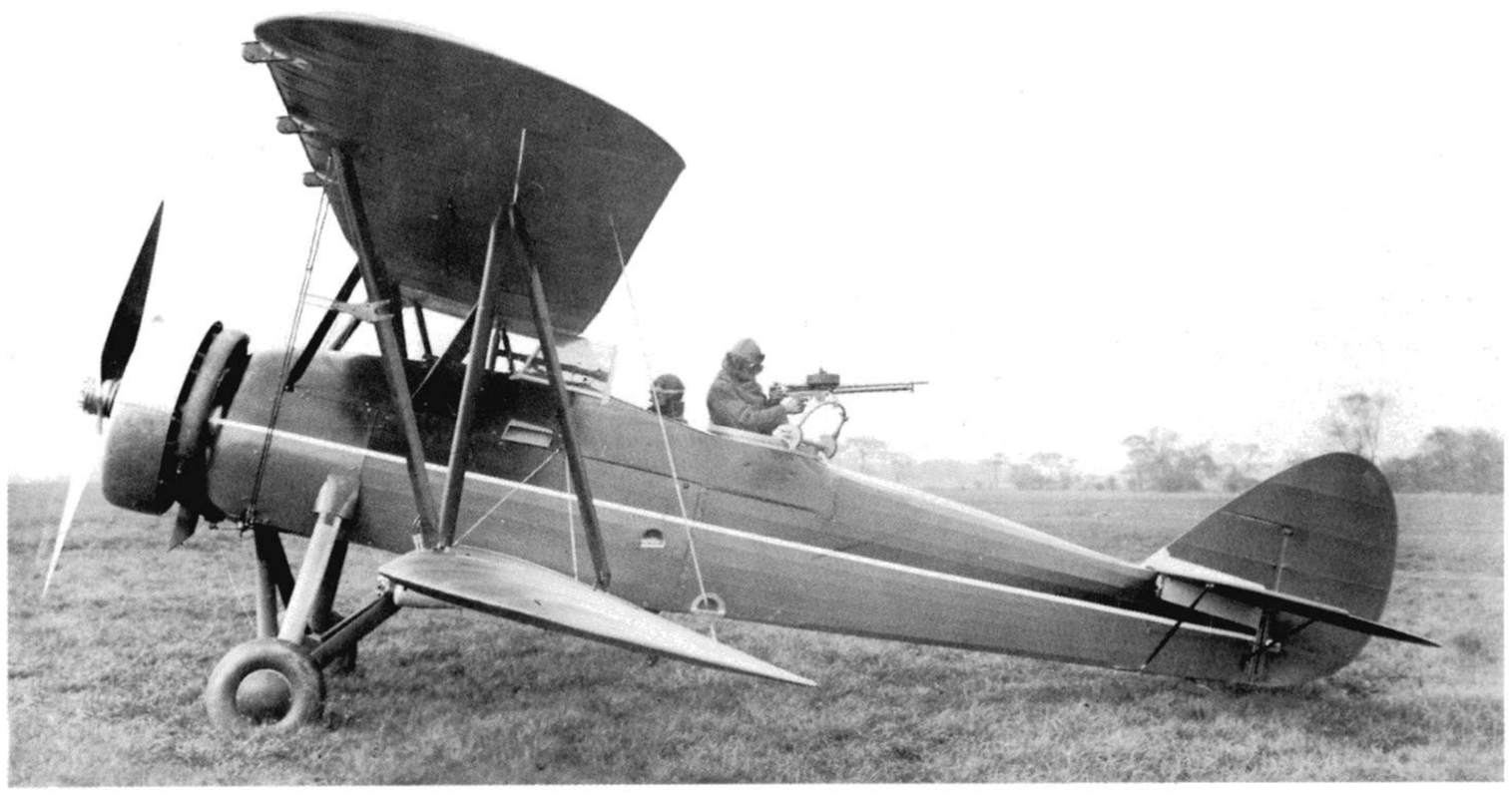
Reg	C/n	Date	Cancelled
VR-HCE	637	15.7.33	19.10.33
VR-HCH	635	2.8.33	19.10.33
VR-HCI	636	11.8.33	19.10.33
VR-HCP	665	7.3.34	28.11.34

In addition, c/ns 662-664 and 681 delivered late in 1933.

The three-engined **Avro 624 Six** (105 hp AS Genet Major) passenger transport was a licence-built version of the Fokker F.VII. Two were sold to Changchow, Fukien, by the FEACo:

Reg	C/n	Date	Cancelled
VR-HAQ	457	30.3.32	25.1.35 as sold (Ex G-AAYR)
VR-HBF	575	13.7.32	23.7.32

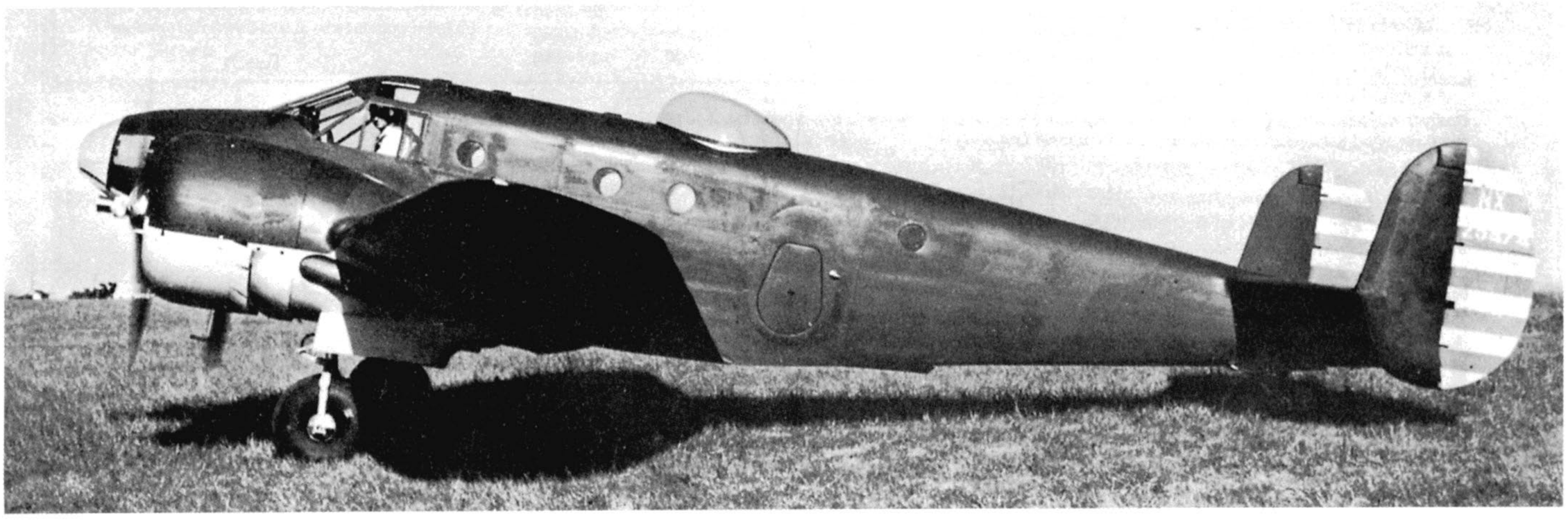
The **Avro 631 Cadet** (135 hp AS Genet Major I) was a two-seat trainer. The prototype (c/n 558, ex G-ABRS) was imported by the FEACo about September 1932. Another (c/n 678) was shipped in December 1933 and arrived in



Top: Avro 631 Cadet VR-HCL of the Far East Flying training School.

Above: The Avro 637 was sold to the Kwansi Air Force.

Bottom: Beech M-18R.



January 1934. It was sold to the Commission on Aeronautical Affairs in July. Three were sold to the Far East Flying Training School (FEFTS): VR-HCM, 'N and 'S (c/ns 684, 685 and 558). VR-HCL (c/n 683), registered on 19 February 1934 (cancelled 30.7.34), was originally intended for the FEFTS, but was instead delivered to Kwangsi as a pattern aircraft for local licence production. Eight Avro 631s were built at Liuchow in 1934-35.

Bayerische Flugzeugwerke (BFW)

Three **BFW U 12a Flamingo** (80 hp Semens Sh 5 or 96 hp Sh 11) two-seat training biplanes were sold by Carlowitz & Co and were delivered to Shantung in 1927. They were probably c/ns 324-326 and arrived about 1 September.

One U 12a and one **U 12b Flamingo** (125 hp Siemens Sh 12) were sent by Carlowitz to China for demonstrations in 1929, together with a two-seat **M 23b** (82 hp Siemens Sh 13) monoplane. They arrived in August, were assembled, test flown and then demonstrated by German pilot Lehmann. One Flamingo and the M 23b were purchased for use by the Shansi Air Force at Taiyüan. Another M 23b arrived in Shanghai at the end of February 1931. It had been sent by the Exportgemeinschaft der Deutschen Luftfahrtindustrie for demonstrations in Nanking.

The Shantung Air Force Flamingos were taken over by the Manchurian Air Force in 1928 and the Shansi example was possibly captured by Nanking in November 1930. The second Flamingo sent in 1929 seems to have gone to the Nanking aviation school, which had a three-seat aircraft of this type in February 1930. By 1933 there was one in the Canton Air Force as well (it was assigned to 2nd Squadron and had s/n 212).

A single **M 18d** (325 hp Wright J-6-9 Whirlwind) cabin monoplane (c/n 470) was exported on 27 July 1930 for use by Aero Survey (Chekiang Conservancy Board) at Hangchow. It was fitted out for aerial photography. When it arrived in September it could not be landed as no permit had been obtained from the Chekiang Government. It was shipped to Japan but was later delivered to Hangchow.

Beechcraft

Eleven four-seat **Beech D 17R** (420 hp Wright R-985-AN-1) cabin biplanes, c/ns 181, 182, 217, 235-237, 239 (as spare parts), 325, 326, 328 and 329), were delivered to China in 1937-39, most for use in the ambulance role. Two of them were shipped in September 1937, five in August 1938 and four in October 1939. Some were used as liaison aircraft and were attached to different CAF headquarters and to the Air Transport Group. One was used by CNAC from February 1939 (CNAC No 37).

The Government also ordered six twin-engined **Beech M-18Rs (AT-18R)** (420 hp Wright R-975) in February 1940. They were with fitted out with bomb racks and machine guns for use as light bombers. The first was tested as NX25474 (c/n 375) and delivered on 30 September 1940. The others were c/ns 376-380 (NX25475-NX25479). One Beech 18, possibly one of the M-18Rs, was registered in Burma to the Inter-Continent Corporation (CAMCO) as XY-AAL (CAF s/n AT-10015) in 1941.

Bellanca

Twenty examples of the two-seat **Bellanca 28-90A** (900 hp Pratt &Whitney Twin Wasp Senior) monoplane bomber (c/ns 981, etc) were sold to the Hanover Sales Corp on behalf of the Spanish Republican Government, but the US State Department prohibited the sale and the aircraft were later re-sold to China. An export licence was issued on 9 August 1937 to the Wah Chang Trading Corp. Nineteen aircraft left Baltimore on 27 August on board SS "Wichita", but the twentieth machine was not ready and would follow later.

The 19 aircraft had to be to be offloaded at San Pedro, California, however, following a presidential decree on 14 September. All 20 were finally shipped on a Dutch freighter via Great Britain in November 1937 and arrived in Hong Kong in January 1938. One was wrecked in unloading at Shanghai and many were destroyed in Japanese air raids and during test and training flights.

Breda Ba 28. (CAHC)

BFW M 18d "Tse Liang 1" was specially equipped for aerial photography.

Bird

A **Bird CK** (125 hp Kinner B-5) three-seat biplane trainer, c/n 4034 (ex N919M), was sent to Carl Nahmmacher, Shanghai, whose company Airmotive represented Bird in China, late in 1931 for use as a demonstrator. It was probably acquired by Chang Hsueh-liang and used by him in Peking.

Blackburn

On 10 March 1930 Chang Hsueh-liang signed a contract with Arnhold & Co, representatives for Blackburn in China, whereby the British company was to send one example of the **Blackburn Lincock III** (250 hp AS Lynx Major) single-seat fighter to Mukden for demonstrations. This was probably c/n 2920/1, although this aircraft, which received its CofA on 10 September 1930, is said to have been sent to Japan. It was flown by Captain F A Swoffer in Mukden during the autumn of 1930 and was sold to Nanking in July 1931. In October 1930 two Lincocks (c/ns 2920/3 and 2920/4) were sold to Ho Chen, Hunan, who was later persuaded to cede the aircraft to Nanking. They were shipped on SS "Glengarry" in December and were handed over to the Nanking Air Force in May 1931.

Boeing

The first Boeing in China was a **Model C** (100 hp Hall-Scott A-7A) two-seat floatplane trainer that was purchased by the Macao Aerial Transport Company and arrived in March 1920. It was photographed in derelict condition on a scrap yard in Macao in 1930.

Boeing was later represented in China by United Aircraft Exports, which was in turn represented in Hunan, Hupeh, Honan, Szechwan, Kansu, Shensi and Shansi by L E Gale & Co. A **Boeing 100D** (450-480 hp Pratt & Whitney Wasp) single-seat fighter was sent to China as a demonstrator and arrived in September 1931. It was c/n 1144 (NC873H). Joseph G Hopkins was to have been sent as pilot, but he could not obtain the necessary War Department permits, and Julius Barr was sent instead. Barr first made a spectacular demonstration in Nanking but then crashed the Boeing on the way to Peking and had to send it back to the USA. He had intended to break a speed record during the flight but a burst oil line forced him to try to land. Although the aircraft somersaulted and broke in two Barr escaped uninjured.

A **Boeing 218** (600 hp Pratt & Whitney R-1340-33 Wasp), c/n 1260 (US Reg X66W), which had previously been evaluated by the USAAC as the XP-925, was sent instead and arrived in China in December. It remained in storage in Shanghai, however, because an import permit could not be obtained. During the "Shanghai Incident" it was assembled at Hungjao and was then purchased for the Nanking Air Force on 18 February. Instructor Robert Short was asked to deliver the aircraft to Nanking. On 22 February he was shot down and killed by Japanese aircraft while flying the Boeing fighter.

Two **Boeing 247** (550 hp Pratt & Whitney S1H1-G Wasp) twin-engined passenger transport monoplanes were sold to China. The first, a Boeing 247D (c/n 1955), was fitted out as an executive aircraft with VIP interior for personal use by Chang Hsueh-liang. It was shipped on 9 November 1934 to Shanghai and was assembled and tested in December. It was named "Bai Ying" (White Eagle) and was flown by Julius Barr. From April 1937 it was used by Chiang Kai-shek, but Japanese bombs later destroyed it.

Chang Hsueh-liang ordered a second aircraft, Boeing 247D c/n 1952 (ex NC13366), through his financial advisor J C Elder on 30 September 1936. It was modified into the armed Model 247Y and was shipped in the summer of 1937. This aircraft, which was now "for Madame Chiang Kai-

shek", arrived in Hong Kong, where assembly was permitted in July 1938 after removal of the machine gun fittings. It had apparently been paid for by Chinese subscription in the USA. It was flown to Hankow on 23 July. Early in January 1939 a "10-seat Boeing transport" was found crashed near the Indochina border and this was probably the Boeing 247Y.

In September 1934 E R Dorsey demonstrated a **Boeing 281** (600 hp P&W R-1340-27 Wasp), the export version of the P-26A single-seat fighter monoplane, in Canton, which was promoted by Boeing salesman Wellwood Beall. On 28 November Dorsey crashed to his death with this aircraft, US Reg X12771 at Hungjao, Shanghai. The Canton Air Force had ordered ten similar aircraft, however, but had problems with receiving a Central Government import permit. An American export licence was applied for in October 1934, but was not granted until September 1935 and the fighters were not shipped until on 16 January 1936. They were assembled by company machanic Nemo Poncetti, who trained the personell at Canton on the new fighters. The Boeing 281s were taken over by the CAF and were assigned to the 17th Squadron, 3rd Air Group, for the defence of Nanking.

Breda

G H Lautenberg of the Compagnia Italiana D'Estremo Oriente, Shanghai, represented Breda in China. In the summer of 1933 Norwegian Reidar Aagaard was selling Breda aircraft for this firm. He maintains that he managed to sell two aircraft to Fukien, but no details are known. According to an American intelligence report dated 1 March 1935 a Breda two-seat open low-wing aircraft was stored at Shanghai.

A two-seat **Ba 19 ter** (260 hp Armstrong Siddeley Cheetah IIA) aerobatic biplane (c/n 1843) was purchased by Dr Joseph Fuchs, Nürnberg, and exported to him in China in October 1933. It was painted in a special eye-catching scheme.

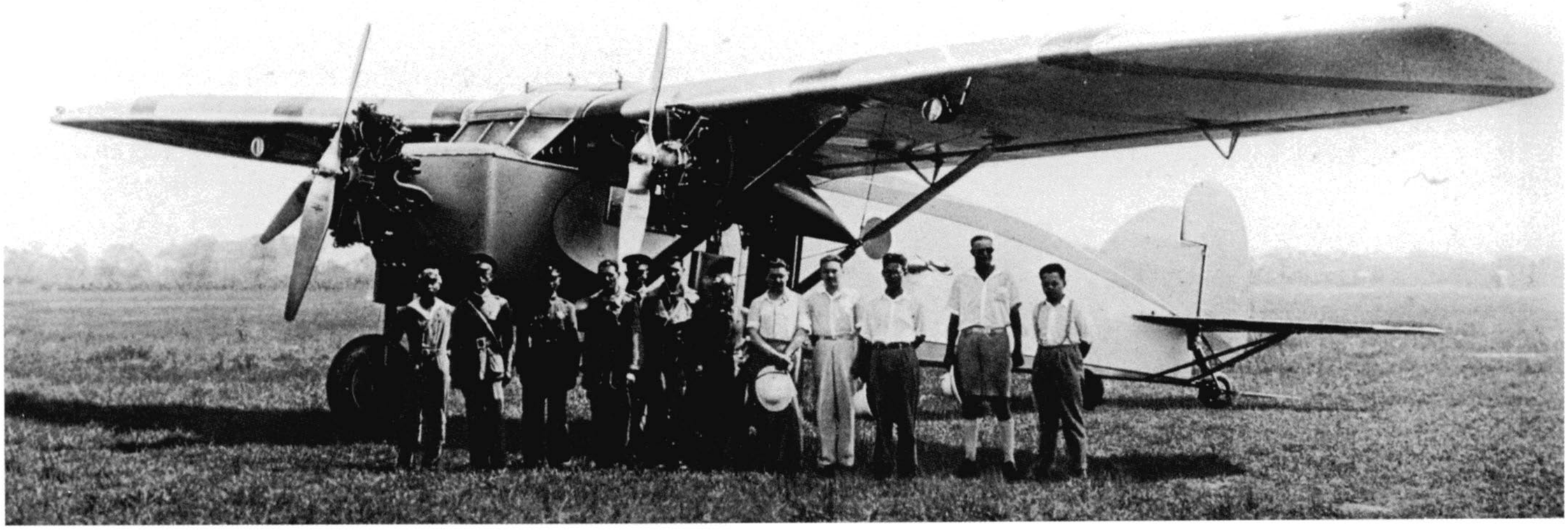
Contracts were placed in 1934 for 20 Ba 25 trainers and nine Ba 27 single-seat fighters. The **Ba 25** (240 hp Alfa Romeo Lynx) two-seat biplane trainers, CAF s/ns NB1-NB20, were delivered late in 1934 and the nine **Ba 27M** (540 hp Alfa Romeo Mercury IVA) single-seat fighter monoplanes followed early in 1935. They were assigned to the 7th Squadron (s/ns 701-709), but were later transferred to 29th Squadron and used as advanced trainers. Eighteen **Ba 28** (370 hp Piaggio P.VII Stella) two-seat training biplanes were purchased, probably in 1936 to supplement the Ba 25s.

The **Ba 65** single-engine two-seat fighter and ground-attack monoplane was chosen for production at the SINAW factory at Nanchang. One example was modified for the Pratt & Whitney Twin Wasp and was to be sent with 29 sets of parts for a total of 30 aircraft. The sample aircraft was apparently shipped with MS "Fusijama" in 1937, but probably never reached China.

Breguet

The Breguet 14 two-seat bomber biplane was one of the most numerous aircraft types in China in the 1920s. Several versions existed, the **Breguet 14A2** and **14B2** (300 hp Renault 12), the **Breguet 14/400** (400 hp Lorraine 12Da) and the **Breguet 14Tbis** (300 hp Renault 12), which had a cabin for three passengers inside the fuselage. About 60 of all versions were supplied by Boixo Frères to Manchuria in 1923-24. At least five of these were Breguet 16Bn2s (See later!) and at least ten were Breguet 14/400s. Chekiang bought six to eight (including Breguet 14Ts) from Chapeaux Frères in 1923 and Yünnan received six in 1923 and two in 1928. The Peking Government ordered eight in 1924, but these were never delivered. Shansi got two from Boixo Fréres in 1925 and Pakhoi two in 1928. In the same year eleven (including Breguet 14Tbis) were sold to Canton. After 1927 surplus French Air Force Breguets in Indochina were disposed of in China and in 1930 six such aircraft were acquired by the Navy at Amoy (from the Indo-China Aviation Company) and another six by Szechwan.

Shangtung had a number of Breguet 14s in 1927, but these probably came from Mukden. Several provinces



Caproni Ca 101 at Hangchow.

Two Breguet 14s of the Canton Air Force. These aircraft had been captured from Chekiang.

obtained their Breguets by capturing them from other warlords. Kiangsu obtained a number in 1925 and Canton took two, which then passed on to the Nanking Air Force in 1927.

At least five and possibly as many as 16 **Breguet 16Bn2** (300 hp Renault 12) two-seat bombers were delivered to Manchuria.

Manchuria was reported to have ordered 70 **Breguet 19** (450 hp Lorraine Dietrich) two-seat bombing and observation biplanes in April 1924, but these were never delivered. Four ordered by the Peking Government were not delivered either. Lieutenant Pelletier Doisy's Breguet 19A2 "No.3" arrived in China on 20 May 1924 but crashed near Shanghai. It was later repaired at Lunghua and was presented by Boixo Frères to Manchuria in June 1926. Eight or ten more of the same type were allegedly ordered, but none was delivered.

French aviatorsArrachart and Rignot arrived at Mukden on 22 August 1929 with a **Breguet 19GR Bidón** (550 hp Renault), a special long-distance version. When they could not arrange for the necessary permits to return via Siberia this aircraft was purchased by the Manchurian Air Force as well.

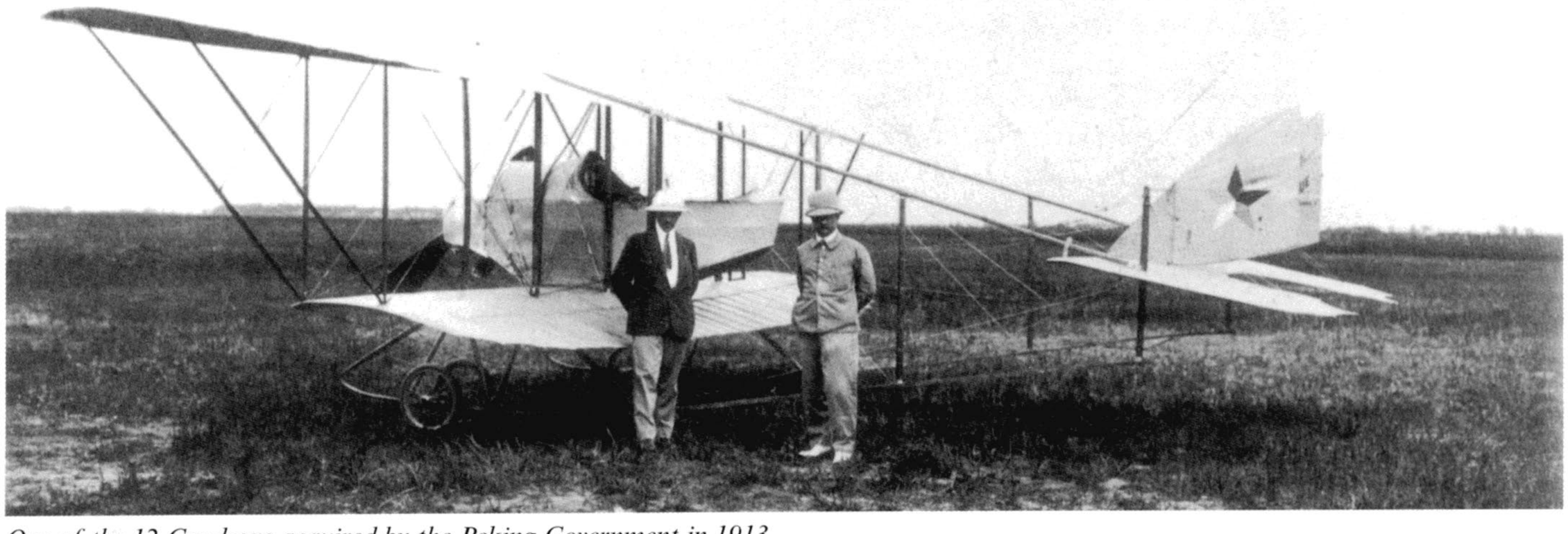
In March 1934 the CAF ordered five **Breguet 273** (860 hp Hispano HS 12 Ydrs) two-seat light bombers from French aviation industry representative Jean Audinet. A further five were added to the order on 22 June the same year and the last of these ten aircraft (c/ns 501-510) arrived in December 1934. Breguet pilot Remmert and mechanic Letuppe were sent out to China to assemble the aircraft, which were assigned to the 13th Squadron. The first one was test-flown on 5 January 1935.

Bücker

One **Bücker Bü 131 Jungmann** (105 hp Hirth 504A-2) two-seat training biplane was sent to China before 1938, probably for demonstrations, but nothing is known about the fate of this aircraft. Five Bü 131Bs were sold to Manchukuo in 1938. Four of them became M-81 to M-84 (c/ns 836 and 841-843) and two were registered in Japan to the Manchurian Aeronautical Association (J-EBHB and J-EBHC).

Caproni

Caproni was represented in China by R V Bay, Shanghai. One **Caproni Ca 101** three-engined bomber-transport monoplane was sent to China in the autumn of 1933 and



One of the 12 Caudrons acquired by the Peking Government in 1913.

was taken to Hangchow for demonstrations. It was later purchased for the CAF. A special aerobatic **Ca 113** two-seat training biplane (registered I-AAXO) arrived in China in December 1933. It was demonstrated by Mario Bernardi in Shanghai and Nanking, but was later returned to Italy after the summer of 1934.

In January 1934 two **Ca 111RC** (750hp Isotta Fraschini Asso) single-engined reconnaissance-bomber monoplanes were shipped to China on board the SS "Comte Verdi". One of them was I-ABIC (MM10534). One was assembled at Hungjao and flown to Nanking on 8 July by Mario Bernardi, who demonstrated the bomber at Kuling in Kiangsi and other places. One Ca 111, fitted out as a transport, was given as a present from Mussolini to Chiang Kai-shek. The Compagnia Italiana d'Estremo Oriente closed a contract with the National Government for six Ca 111RCs (c/ns 3567-3572) in 1934 and these were delivered to the 9th Squadron with s/ns 901-906 early in 1935.

Caudron

Twelve early **Caudron** biplanes (c/ns 48-59), three model **D** (40 hp Anzani) single-seat trainers (c/ns 48-50), one **F** (50 hp Gnome) single-seater, four **G** (50 hp Gnome) two-seaters and four **G 2** (80 hp Gnome) two-seaters (including c/ns 57 and 58) were ordered by the Peking Government on 14 January 1913 together with a complete workshop for repairs. One of the G2s could be fitted out as an amphibian with a combined wheel and float undercarriage. The aircraft were accepted in France in March 1913 and arrived in Peking in June. Starting on 24 June they were test-flown by René Caudron and they were finally handed-over in July. A second order for four more Caudrons, 19 engines and materials for local construction was signed in 1913 but was later cancelled due to financial restraints.

In 1922 the Caudron Company presented a **Caudron G 3** (80 hp Le Rhone) two-seat training biplane. It was imported by French air attaché Roques and pilot Masse to Peking in October 1921 and was handed over to the Government on 26 August 1922. Six of this type were sold to Yünnan in 1924 and Manchuria bought ten in 1925.

The **C 59** (180 hp Hispano-Suiza 8Ab) two-seat training biplane was used at several places in China. Manchuria purchased 16 in 1924 and one "Caudron", probably a C 59, was purchased by Canton in 1928. Kiangsu captured some (five or more) C 59s and Canton obtained five, which then passed on to the Nanking Air Force. The type was copied and one, called "Success No 1" (180 hp Hispano-Suiza) was built in Shanghai for the Nanking Air Force. It was completed in January 1929. In 1927 it was planned to start production of 20 **C 127** (80 hp Rhone) two-seat training biplanes at Mukden, but this was not realised.

A Caudron biplane was used by the First Dutch Aviation Company for sightseeing flights in Hong Kong in January 1926. Another Caudron (240 hp engine) of unknown model (possibly a **C 140**) was brought by Randon & Co to China and the pilot M Coulet was arranging to fly it to Peking for a demonstration in July 1931.

Cierva C 30A (Avro 671) autogyro.

Christofferson

Syun Wen, the leader of the Revolutionary Army, purchased an American **Christofferson** biplane (125 hp Hall-Scott). It was assembled and test-flown by Yukiteru Ozaki in Japan and was then delivered to China in August 1916.

Cierva

Two examples of the **Cierva C 30A** (140 hp AS Genet Major IA) two-seat autogyro, licence-built as the **Avro 671**, were taken to China by the FEACo/Aircraft (China), Ltd. The first (c/n 734) was registered VR-HCT on 27 December 1934 for a demonstration tour. It crashed almost immediately after its arrival in Hong Kong, however, and a new example was sent out. VR-HCT was later repaired and taken over by the Far East Flying Training School.

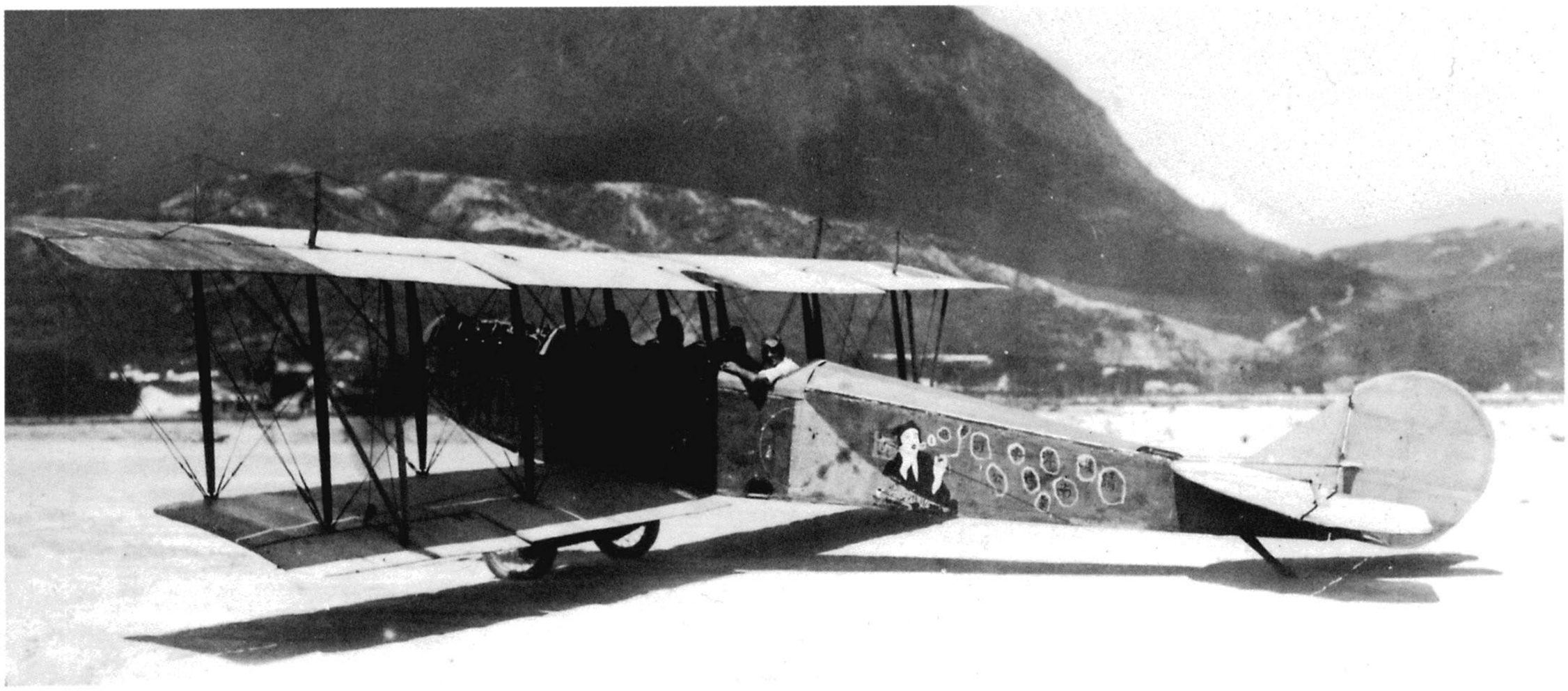
The new autogyro (c/n 808) arrived about May 1935 and was demonstrated by A D Bennett at Lunghua, Shanghai, on 21 June before a large number of spectators. It was later shown at Nanking, Hankow and Nanchang and was finally taken over by the Central Government for evaluation at Nanchang.

Comper

Comper was represented in China by the FEACo, who sold at least one **Comper CLA 7 Swift** (70 hp Pobjoy R) single-seat high-wing light plane. This was former Spanish-registered EC-AAT (c/n S.32/12), which had made a flight from Spain to Manila and was purchased afterwards by the FEACo. It was exhibited in Shanghai in May 1933 and was later owned privately by Wu Yu-chuan in Peking. Another (or the same?) Swift was owned by a General Yung and was named "Liao He". It crashed at Nan Hu, Hangchow, but received only slight damage and was probably repaired.

Consolidated

A **Consolidated Model 21-C** (300 hp Wasp Junior) two-seat trainer, c/n 1 (NR784N), was used for a sales tour in China in 1933 when it was flown by Clint Warner. It was later returned to the USA. CNAC obtained a pair of ex-Pan American **Model 16 Commodore** (575 hp Pratt & Whitney Hornet B) twin-engined high-wing 22-passenger transport flying boats (c/ns 7 and 9, ex NC663M and NC665M). They had been shipped to Manila for service in the Philippines and were still in their crates when they were purchased on 12



The Curtiss JN-4C owned by Lim On.

December 1937 and delivered via Hong Kong in January 1938. Their new identities were CNAC No 34 "Wuchow" and 35 "Changsha".

For Consolidated-built **Fleet** aircraft, see under Fleet.

Curtiss

It is very difficult to establish exactly how many Curtiss aircraft were imported to China during the early 1920s. Reference was often made just to "Curtiss" or "American" aircraft and the type was seldom mentioned. A number of Curtiss Pushers were imported before and during the First World War and the Macao Aerial Transport Company purchased a number of Curtiss aircraft in 1920. Most of the other Curtiss aircraft imported to China were purchased by the Canton Government, but although being mentioned in several reports these aircraft remain difficult to identify.

The Chinese Navy was about to sign a contract for 10 Curtiss "C-F-1-6" flying-boats, 20 Curtiss "C-H-S" flying-boats, 50 Curtiss "C-S-G" flying-boats, 10 Curtiss "C-H-A" hydroplanes, 15 Curtiss "C-N-S" hydroplanes, 40 extra 400 hp engines and 65 150 hp engines in June 1920, but the deal was called off. In September 1920 the North West Trading Company and the A O Anderson Company applied for a licence to import four American "navy type" aircraft for civil use "under American corporation with some Chinese interest". Two Curtiss biplanes and two seaplanes, consigned to the North West Trading Company reached Shanghai from the USA in November. They were landed at Swatow, however, and were apparently delivered to General Chang, Kwangtung.

Peter Paul Devlin, New York, tried in June 1922 to export two Curtiss biplanes to South China, but could not obtain the necessary permits. In September the same year as many as 34 Curtiss aeroplanes were reported to be on the wharves at Shanghai after having been landed from a Japanese steamer and 36 more to be on the way out! Another report said that 60 Curtiss aircraft were detained by customs in Shanghai (November 1922). In January 1925 six Curtiss aircraft that had been confiscated by customs about three years earlier on their way from the USA to China were auctioned at Manila.

These incidents are only examples and below follows a type-by-type survey of what has come to light about the use of Curtiss aircraft in China.

In November 1911 a group of Chinese in the USA purchased six **Curtiss Pushers**, which arrived in Shanghai in January 1912. One was ready for flying on 20 January but was damaged and in February another one crashed during the first test flight. These aircraft were then moved, probably to Canton, but their fate is not known

Fung Yu took a home-built Curtiss Pusher type aircraft from the USA to Hong Kong and Canton in 1911 and in 1914 Lym Fuk-Yen brought a Curtiss D Pusher from the USA, which was interned in Hong Kong until late in 1915 when it was sent to Swatow. Another Curtiss D was imported to Canton by Chen Kuei-p'an and Tom Gunn arrived in Hong Kong on the SS "Mongolia" on 15 June 1915 with a Curtiss hydroplane (106 hp engine).

One **Curtiss Seagull** (100 hp Curtiss OXX-3) single-engined three-seat flying-boat was delivered to the Macao Aerial Transport Company by Robert Johnson of the Curtiss Far East Company. It arrived from Manila on board the SS "Africa Maru" on 16 February 1920.

After the end of the First World War 400 hp Liberty-engined **HS-1L** and **HS-2L** single-engined flying-boats, **H-16** and **F-5L** twin-engined flying-boats and **N-9C** (100 hp Curtiss OXX) two-seat biplane float/landplanes were purchased from the USA. The Macao Aerial Transport Company imported five H-16s and two HS-2Ls in March 1920 and they were converted into passenger transports for 4 and 14 passengers, respectively.

The "Chinese-American Aviation Company" purchased two HS-2Ls in the summer of 1920. They were shipped to

Curtiss Hawk I (and not Hawk II, as often seen) is the correct name of the first Chinese Hawk fighters. (Wings of China)

Shanghai and then to Hong Kong, where they were first detained. They were released later, however and were delivered to Canton before November 1921. In February 1920 Ch'en Chiung-ming of Canton ordered seven (or eight) hydroplanes in the USA. On 10 September two two-seat Curtiss biplanes (90 hp engines) arrived in Swatow from Shanghai on board the SS "Tung Sheng", but according to another report these aircraft were in fact a HS-1L and an Aeromarine floatplane. Two HS-1Ls arrived in Shanghai with the SS "Kuang Sheng" on 7 October and went to Hong Kong two days later. The remaining four were "large-size 15-seat hydroplanes".

The Canton Government seems to have acquired a total of six or seven HS-1L/HS-2Ls and two to six H-16s. The N-9C was used by the Canton Air Force as well and at least three were in service by mid-1923. It has not been possible to find out when these aircraft were delivered, but it was probably not before 1923. The Abbott School of Aviation in Hong Kong purchased an F-5L flying boat and three "smaller Curtiss biplanes" from the Philippine Government in March 1925. The latter aircraft included at least two HS-2Ls.

The **JN-4C (Can) Canuck** and **JN-4D Jenny** (90 hp Curtiss OX-5) were two variants of the same two-seat training biplane. In March 1920 Lim On purchased a two-seat JN-4C in Canada and he later took it to Hong Kong. The Canton Government obtained between 8 and 13 JN-4Ds in 1922-23. In January 1923, for example, delivery was expected from Manila of five JN-4s, which had been sold by American citizen George Cole to the Canton Government. Fukien warlord Li Hou-chi purchased six JN-4D2s from James Selvin, who represented Curtiss aircraft in China, in May 1922. It seems that in fact 12 aircraft were ordered, but the American export licence was cancelled after the first six had been shipped. The aircraft arrived in Fuchow in August 1922, but were quickly sent to Shanghai because of unstable political conditions and were detained by customs. They were finally sold to Paoting, Chihli, and were delivered there in the spring of 1923. Another eight Jennies, eight three-seaters (Orioles, probably) and eight eight-place transports were ordered but never delivered. A company called "Great China Airways" was used as a front for this deal. In May 1923 Manchuria purchased a pair of Japanese-built two-seat Curtiss trainers, probably JN-4s, with 110 hp Hall Scott engines.

The Abbott School of Aviation in Hong Kong took over Lim On's JN-4C and also obtained a JN-4D from the Philippine National Guard in Manila in October 1924 and a **Curtiss Oriole** three-seat biplane in August the same year. Another Oriole was purchased by A H Rowe in Hong Kong. One had a 150 hp Curtiss K-6 engine and one the 90hp OX-5. In November 1923 American pilot Charles Kenner purchased an Oriole from the Curtiss School in Manila with the intention to fly to Canton. He crashed in Hong Kong, however.

In March 1929 four Curtiss demonstration aircraft arrived in Shanghai on board the "President Johnson" with pilots E L Sloniger and A L Caperton. The aircraft had

been shipped on 26 January and they were set up at Hungjao. The Nanking Government requested all four on 30 March and soon purchased them. Two were Robin three-seat cabin monoplanes, one was a **Falcon** (400 hp Liberty) two-seat observation biplane and one was an **Ireland N-2 Neptune** (300 hp Wright J-6), a five-seat biplane amphibian that was marketed by Curtiss-Wright.

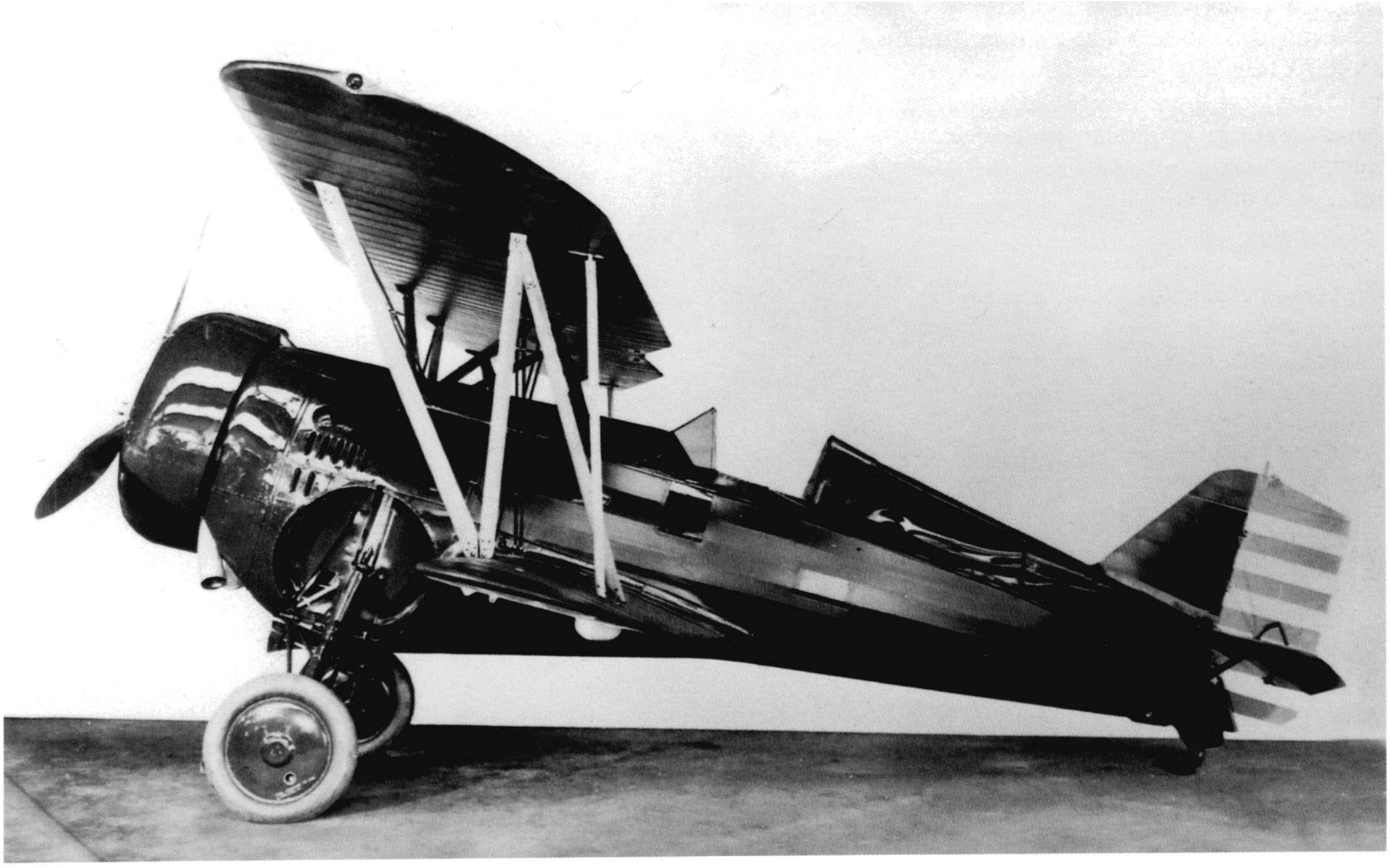
One Robin was demonstrated at Hungjao by Sloniger on 27 March and a number of passenger flights were made. One of the **Robins** was a **B-1** (90 hp Curtiss OX-5), the other a **Robin C** (185 hp Curtiss Challenger). The first-mentioned example was c/n 84 (ex US Reg 169E) and the C-model was c/n 80 (ex US Reg 46E). Another Robin B, c/n 385 (CF-ACG), was sold by the Curtiss Reid Flying School in Canada to the Chinese Patriotic League on 11 October 1929 and was shipped to China. According to unconfirmed information a contract for 30 Robins was contemplated, perhaps signed. The Falcon was c/n 14 (NC214E) and the Ireland Neptune was c/n 21 (US Reg 9736).

In December 1930 China Airways applied for an export licence for another Falcon (Curtiss Conqueror engine), almost certainly c/n 6, NR310E, and a **Fledgling J-2** (240 hp Wright Whirlwind) two-seat training biplane. They arrived in China early in 1931 and were demonstrated in Nanking. It is not clear how many examples of the Fledgling (with the 170 hp Curtiss Challenger engine) that were sent to China. Four were shipped on 1 October 1929 to Shanghai and were delivered to the Nanking Air Force. C/n B-50 (CF-ACB) was sold to the Chinese Patriotic League of Ontario, Canada, on 11 October 1929 and was shipped to China. Another example, c/n B-35 (NC254H), was registered to the Chinese Patriotic Flying Corps, Boston, Massachusetts. One Fledgling was demonstrated during the 2 May 1931 aviation pageant in Nanking and one had the slogan "K'ung chün t'ung jen hao" (All staff of the air force) painted on.

On 9 December 1932 the Canton Air Force ordered four two-seat **Curtiss-Wright Trainers** (240 hp Wright J-6-7 Whirlwind). The "China Airways Company" acted as a front for the Canton Government to make it possible to import the aircraft without the consent of the Nanking Government. The order included ten machine guns and ammunition. These aircraft were also referred to as **Travel Airs** (The Travel Air company had previously been taken over by Curtiss-Wright). The trainers were delivered in 1933 and were assigned s/ns 1 and 4 (later one was s/n 26).

CNAC was scheduled to receive the **Thrush** (225 hp Wright J-6-7 Whirlwind), a six-seat passenger transport monoplane. In the autumn of 1929 it was reported that 12 were being built for use in China. Only ten (c/ns 1001-1010) were in fact built and they were to be shipped in January 1930, but were instead registered and in the USA. However, one example was exported to China in 1930, but nothing is known about its use and eventual fate.

The **Curtiss-Reid Rambler III** (120 hp DH Gipsy III) was a parasol monoplane version of the Canadian-built two-seat Rambler light biplane. C/n 1031 (CF-ALL) was sent as a demonstration aircraft to Lam Wing-yan, the local agent



Curtiss Hawk III.

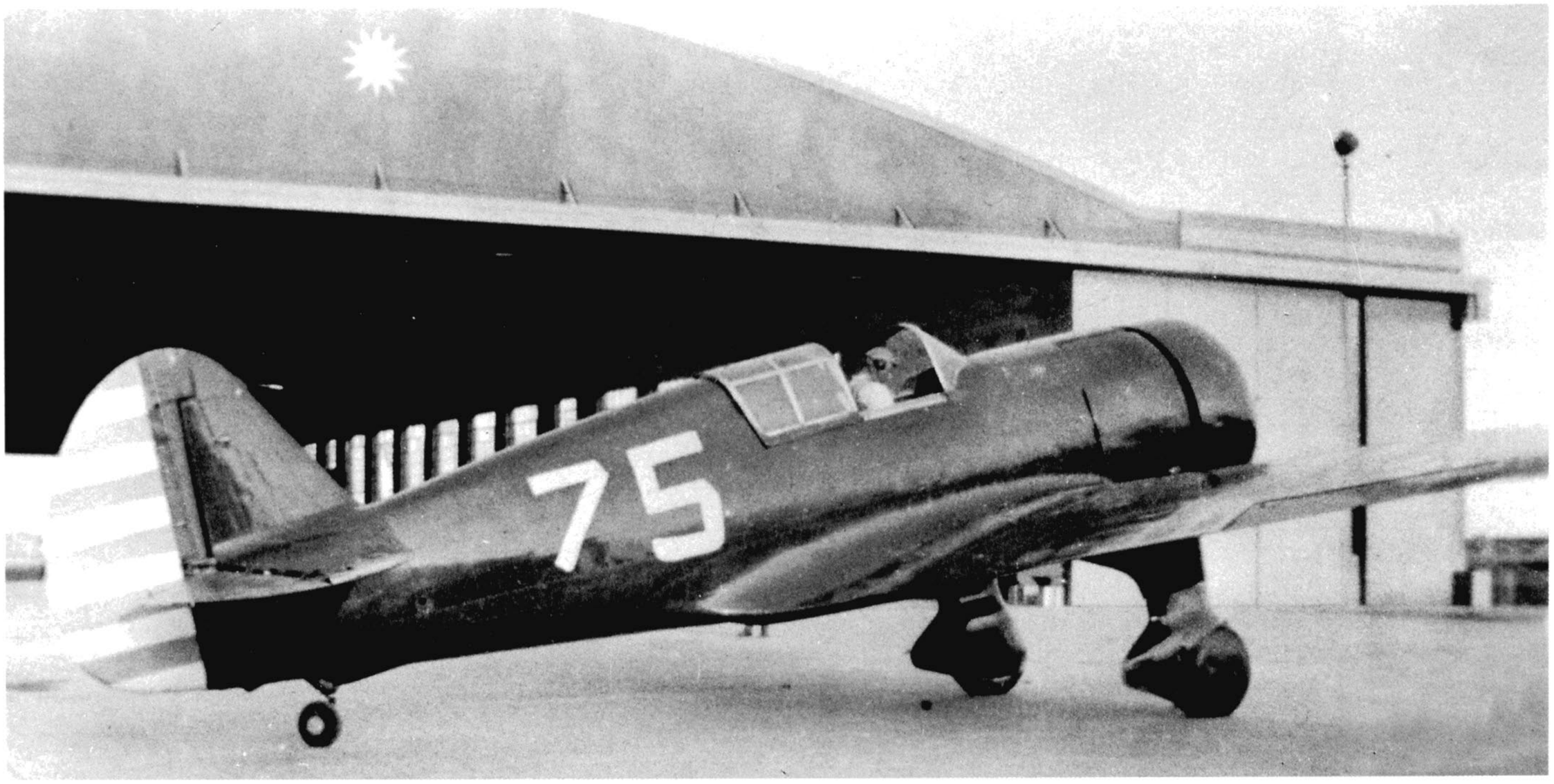
Curtiss BT-32 Condor bomber-transport.

for Curtiss-Reid in Hong Kong, and arrived in mid-March 1932. Pilot Edward L Curtis and Curtiss-Reid President McCurdy accompanied the aircraft, which was flown to Canton on 31 March. It was sold to the South-Western Aviation Company in Canton in 1934. It seems that c/n 1042 might have gone to China as well.

From 1933 Curtiss-Wright was represented in China by the Inter-Continent Corporation and the first aircraft that they attempted to sell was the **Hawk I** (600 hp Wright SR-1820-F2 Cyclone) single-seat fighter biplane. Company pilot J H Doolittle arrived with a demonstrator in April 1933 and flew it at Hangchow and later in Canton during the following two months. The Canton Air Force had ordered 18 Hawk Is in May 1932 and these (c/ns H-27 to H-44/11707 to 11723) were shipped between March and May 1933. The Nanking Air Force purchased the demonstrator at the end of May and finally acquired a total of 32 (c/ns H-45/11674, the demonstrator, H-47 to H-63/11733 to 11749 and H-66 to H-79/11770 to 11783). By September 1933 all had been shipped.

The **Hawk III** (650 hp Wright R-1820-04 Cyclone) had retractable undercarriage. Two demonstration aircraft were shipped from the USA in 1936, one for Shanghai in March (c/n 12095) and one for Canton in May. Thirty were ordered for the CAF and were to be assembled by CAMCO. A contract for one pattern aircraft and 29 sets of parts was signed by the Canton Government in February 1936 and in order to assemble and deliver these aircraft Inter-Continent took over the Shiuchow Aircraft Works.

Parts and material started arriving there late in June 1936. This order was taken over by the Nanking Government and with an additional Canton order for 11 aircraft the total



The Curtiss H-75H Hawk demonstrator sent to China in 1937.

The Curtiss CW-19R and company pilot Harold Welch.

number rose to 71 (c/ns 12095-12154 and 12175-12185). Components for 30 more (c/ns 12726-12755) were ordered in August 1937 and the last Hawk III parts were shipped from the USA in June 1938. The Hawk IIIs were assembled at Shiuchow and by CAMCO.

The **BT-32** bomber version (c/n 52) of the **Condor** (720 hp Wright SGR-1820-F3 Cyclone) twin-engined transport biplane was shipped to China on 17 February 1934 as a demonstrator. Starting in March it was flown by company pilot Frank Hawks. During a demonstration at Nanchang on 17 April 1934 Hawks damaged the aircraft, but it was repaired and sold to the Nanking Government on 2 September as a personal transport for Chiang Kai-shek.

Six former American Airways Condors, T-32s c/ns 25 and 40 (NX12365 and NX12383), AT-32A c/n 43 (NX12391), and AT-32Ds c/ns 48, 50 and 51 (NX12396, NX12398 and NX12399), were sold by Charles H Babb to the Chinese Government in 1939 and allotted to CNAC. They had been stored in Mexico for over a year and had originally been sold to Republican Spain but had been detained. They were taken to California in January 1939 and were rebuilt into freighters. They were then shipped to Hong Kong early in 1940. In CNAC service five of them were identified as F1 to F5, and it is possible that one was reduced to spares. F3 was captured at Hong Kong in December 1941 and used by the Japanese.

American Airlines sold another AT-32A, c/n 42 (NX12390), to the Inter-Continent Corporation (CAMCO) for transport of emergency supplies. It was shipped to Hong Kong and assembled there in March 1940. It was then flown to Loiwing and was registered in Burma as XY-AAI, but was destroyed in the bombing of the CAMCO factory on 26 October 1940.

Twenty **Curtiss Model 60 Shrike** (690 hp Wright R-1820-21 Cyclone) two-seat ground attack monoplanes were sold to China and delivered in May 1936 (c/ns 12155-12174). They were assigned to the 26th and 27th Squadrons of the 9th Air Group. One **CW-19R** (450 hp Wright R-975) two-seat trainer/light attack monoplane was sent for demonstrations in the summer of 1937. It was painted with Chinese markings and had possibly been taken over by the CAF when it crashed on 5 January 1938. American pilots Harold Welsh and Bo Sangster were killed in the accident.

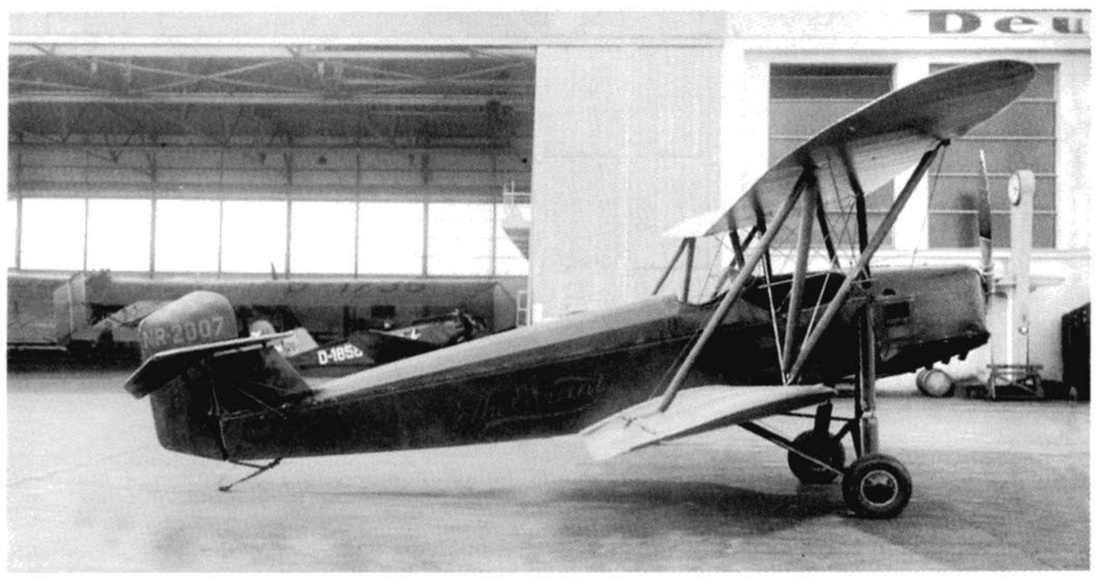
The **CW-21** (1,000 hp Wright R-1820-G5 Cyclone) was a single-seat lightweight fighter. C/n 21-1 (NX19431) was sent to China as a demonstrator. It arrived at Rangoon on 24 January 1939 and reached CAMCO at Loiwing on 28 February. It was flown by company pilot Robert Fausel in Nanking and Chengtu in March and delivery of 70 aircraft was offered. On 31 May 1939 a contract for three complete aircraft and 27 (some sources say 30) sets of components was signed and the demonstrator was also purchased. Three aircraft built in March 1940, c/ns 21-2 to 21-4 (NX19441-NX19443), were shipped in May. They were assembled and test-flown at Rangoon, but remained there until being delivered to the AVG in December 1941. All were lost on the ferry flight from Lashio to Kunming on 23 December. Two more were almost finished in the CAMCO factory at Loiwing, but due to the evacuation to India in 1942, none was ever completed.

A two-seat **CW-22 Falcon** (450 hp Wright R-975-28 Whirlwind) training and light attack aircraft was imported by Inter-Continent in 1940 for demonstration purposes. It was probably c/n 22-57 (US Reg NX-16417). As far as known it never flew in China and was instead sold to the Burma Volunteer Air Force in July 1941 (s/n Z-30).

An **H-75 Hawk** (875 hp Wright R-1820-G3 Cyclone) single-seat fighter, **H-75H** c/n 12327 (NR-1276), was sent as a demonstrator. It was shipped on 8 June 1937. After demonstrations in Nanking in August by company pilot Peter Brewster, it was bought for the CAF. Another 30 **H-75Ms** (c/ns 12625-12654) were ordered. They were shipped in May-August 1938 and were test flown by Brewster after assembling. An **H-75Q** (Wright R-1820 Cyclone G-105) (c/n 12898) with retractable undercarriage was shipped in December 1938 and arrived in Rangoon on 14 January 1939. After assembly at CAMCO it was test-flown on 11 February and then demonstrated by Robert Fausel at Kunming, Chengtu and Chungking in February and March. Comparison flights against the I-15bis and I-16 were made. It was also flown by George Weigle, who crashed the aircraft on 5 May.

In March 1939 delivery was offered of 100 similar **H75A-5s** and 50 more as component sets for CAMCO. On 31 May 1939 a contract for one H75A-5 pattern aircraft and 54 sets of parts and material for assembly at Loiwing was signed. A pattern aircraft (c/n 13807) was built, but no H75A-5s were ever delivered to the CAF, although some were assembled by CAMCO in India and went to the RAF as Mohawk IVs.

On the other hand one hundred **H81-A3s** (1,090 hp Allison V-1710-33) were delivered for the AVG in 1941. They were taken at random from a line assembling H81-A2 Tomahawk IIs for the RAF. The following machines were allotted in January 1941 and arrived in Rangoon in May: CAF s/ns P-8101 to P-8136 (c/ns in the range 15337 to 15522 and RAF serials in the range AK466 to AK570). S/ns P-8137 to P-8169 (c/ns in the range 15828 to 15926, RAF serials in the range AM375 to AM473) were allotted in February and arrived in June 1941, and s/n P-8170 to P-8200 (c/ns in the range 15928 to 15972, RAF serials in the range AM475 to AM519) were allotted in March and arrived in Rangoon in July 1941.



The Day-A Sport was also called the Day Special.

Day

Charles Healy Day's **Day-A Sport**, or **Day Special** (120 hp Martin D-333) two-seat biplane, NR2007 (c/n 1) "Errant", was built by the Gates-Day Aircraft Company for an around-the-world flight. On 8 May 1931 the aircraft was loaded aboard a steamer bound for London. Day and his wife then flew to Shanghai, shipped the aircraft to San Francisco and continued the flight across the USA. Later, when Day was running the Shiukwan Aircraft Factory, he took the aircraft to Canton and an export CofA was issued in February 1934 "for exploration flights in Asia". The US licence expired in April 1936 and the aircraft was finally destroyed during a Japanese air raid.

de Havilland (Airco)

In 1925-26 the Soviet Union supplied a number of GAZ No 1-built DH 9 and DH 9A two-seat reconnaissance and light bomber biplanes to China. The **R-1** (400 hp M-5) was a copy of the DH 9A and the **R-2** (220 hp Siddeley Puma) was a copy of the DH 9. At least six R-1s and R-2s were delivered to Feng Yü-hsiang's Kuominchün (KMC) forces at Kalgan and at least six R-1s went to Canton in 1926. Deliveries of further R-1s were planned, including 10 intended for Yüeh Wei-chün's 2nd KMC army, but these allotments were stopped. The Nanking Air Force inherited at least three Canton R-1s, one remained with the new Canton Air Force in 1927 and Manchuria probably captured two ex-KMC R-1s.

Sinkiang purchased two R-1s, which arrived at Tihwa on 23 December 1931. By 12 May 1932 Sinkiang was arranging to buy two more Russian aircraft, but it is not known if this deal was completed. The FEACo sold a single **DH 9** to General Chang Wei-cheung's rebel air force on Hianan Island in 1932. Unfortunately nothing is known about either the origin nor the fate of this aircraft.

The **DH 60G Moth** (100 hp DH Gipsy) two-seat trainer was one of the most numerous aircraft types in China in the early 1930s and it was used by a number of provincial air forces. The first example (c/n 816) was taken to China by de Havilland representatives Arnhold & Co as a demonstrator. It arrived in Shanghai early in 1929 and was first placed on view as a window display in the motor show rooms of the Mark Moody Company. After three days of demonstration flights, Arnhold pilot W E F Jones had to force land in the Shanghai River on 21 March. The Moth was quickly repaired, however, and was still being used by January 1932. By that time Arnhold had sold over 90 aircraft of this type in China.

A first batch of four DH 60Gs was purchased by the Nanking Aviation Bureau on 6 December 1928 and a contract for another four was signed by the Wuhan Commercial Aviation Company at Hankow. The four tha Nanking ordered (c/ns 1023-1026) were delivered t Kaifeng, Honan, where an aviation school was started b warlord Feng Yü-hsiang. The Hankow aircraft were delivered in May, but were immediately taken over by the Nanking Air Force, which had ordered another dozen in April. These (c/ns 1038, 1039 and 1112-1121) were delivered in June.

The next order was from Shansi and called for the delivery of six aircraft. These arrived in Hong Kong in September. Eight more (c/ns 1204-1206, 1208, 1210, 1211 and 1219-1220), including some with floats, were ordered by Arnhold about December 1929. The first two were for the Chinese Navy's aviation school at Hungjao and arrived in Shanghai early in February 1930 and another three with floats were delivered to the Navy later in 1930.

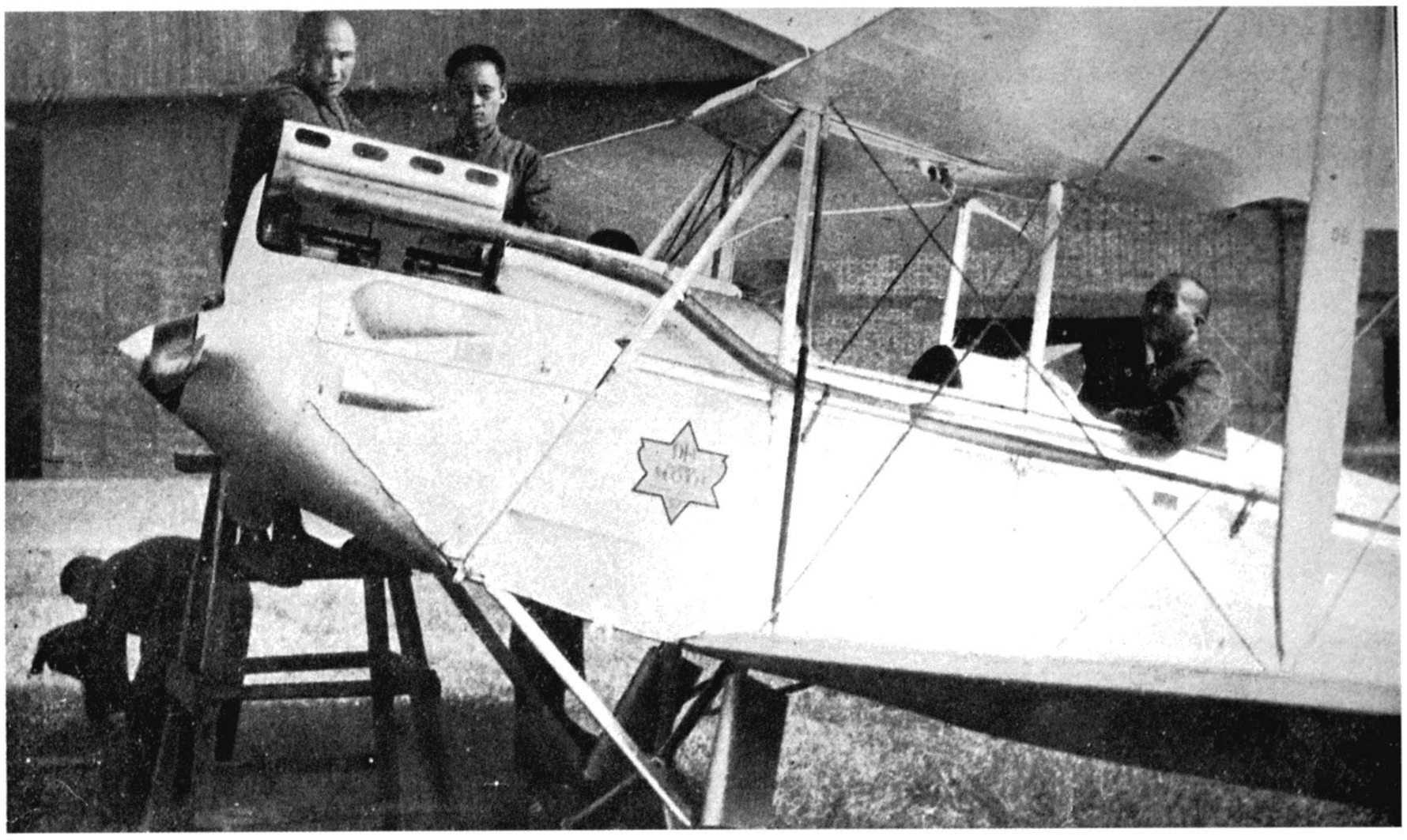
On 10 March 1930 Chang Hsueh-liang of Manchuria ordered six DH 60Gs and one DH 60M with cabin, which were to be delivered via Chinwangtao. They arrived in Mukden in April and May. On 4 April 1931 a new contract for 19 DH 60Gs was signed. The first 12 of these arrived in July and was erected and tested at Mukden by F A Swoffer. Delivery was accepted on 6 September. The remaining seven aircraft had not been handed over when the Japanese occupied Mukden and were seized by them. Arnhold protested against this and in May 1933 the Japanese paid for these aircraft.

Szechwan ordered four Moths, two float undercarriages and an extra engine on 13 October 1930 and they reached the port in Chungking at the end of February 1931. Negotiations with Arnhold & Co for another six machines in March were not completed, however. In October 1930 a contract had been received for one standard DH 60M and one "de Luxe" Moth from the Hunan Aviation Bureau at Changsha and these were delivered in June. In July 1931 orders were signed by the Chinese Nationalist Government in Nanking for six DH 60T Moth Trainers (120 hp Gipsy II) and these were to be assigned to Changsha as well. In April 1931 the Chinese Navy ordered three DH 60M Moths and at the end of September Nanking signed a contract for 13 Moths. In the summer of 1932 a final batch of six Gipsy Moths was sold to the Canton Air Force.

Moths delivered to China via Arnhold & Co, Shanghai

DH 60G (Gipsy I)	
816	Export CofA 2.1.29
1023-1026 (4)	CofA 15-31.1.29
1033-1036 (4)	CofA 7-8.2.29
1038-1039 (2)	CofA 12.4.29
1112-1121 (10)	CofA 11-30.4.29
1141, '44, '46, '56-58 (6)	CofA 31.8-3.9.29
1204-1206, '08, '10, '11, '19, '20 (8)	CofA 4-17.12.29
1242-1243 (2)	CofA 9.5.30

De Havilland DH 60 Moth.



DH 60M (Gipsy I)

1432	CofA 28.3.30 (Chiang Hsueh-liang)
1531	CofA 9.5.30
1664-1667 (4)	CofA 30.10-5.11.30

DH 60M (Gipsy II)

1570-1579 (10)	CofA 22.9-16.10.30
1668	CofA 21.11.30
1670	CofA 27.2.31
1688-1692 (5)	CofA 10-30.3.31
1694-1697 (4)	CofA 22-27.5.31
1699, 1707, '08, '10 (4)	CofA 2-9.6.31
1714-1716, '23, '80-'93 (18)	CofA 22.9-3.11.31

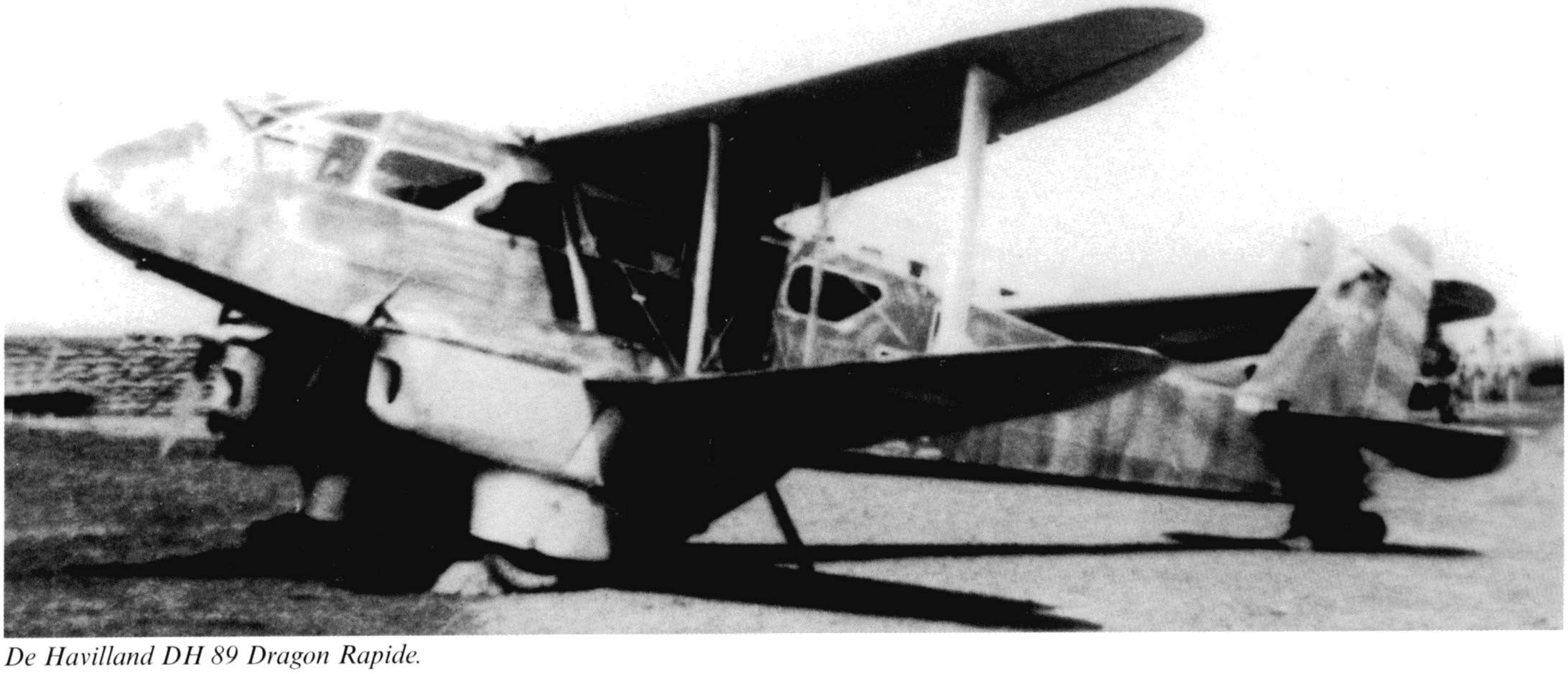
DH 60T (Gipsy II)

1724-1725, '28-31 (6)	CofA 23.9-1.10.31

A **DH 60GIII Moth Major** (130 hp Gipsy Major) was purchased by the Far East Flying Training School. It was registered VR-HCU (c/n 5133) on 26 April 1935 (CofA 4.3.35 to Aircraft China Ltd).

In July 1931 a pair of **DH 80A Puss Moth** (120 hp Gipsy III) three-seat cabin monoplanes were ordered by Hunan (Changsha). Three were delivered to Arnhold & Co, c/ns 2193 and 2194 for Hunan (CofAs 20.8.31), and c/n 2212 (CofA 18.12.31), probably for the Nanking Air Force. MKKK in Manchoukuo and the Hui-t'ung Aviation Company also used Puss Moths and the Manko 3 Type, a copy of the Puss Moth that was built at Mukden.

Only a few examples of the famous **DH 82 Tiger Moth** (120 hp Gipsy III) two-seat trainer were sold in China. A demonstrator, VR-HAR (c/n 3100), was registered to Arnhold & Co on 11 April 1932. C/ns 3149-3151 were



De Havilland DH 89 Dragon Rapide.

delivered to Arnhold & Co with CofAs dated 30 December 1932 (2) and 2 January 1933 (1). All four were fitted with cameras and machine gun mountings and were sold to Canton. Han Fu-chü in Shantung signed a contract for six Tiger Moths with machine guns and bombing gear in January 1934, but these were never delivered.

The **Gasuden KR-1** (150-160 hp Gasuden Jumpu 3) was a Japanese-built copy of the **DH 83 Fox Moth**. Two were delivered to Taiwan Kokubo Gaikai (Taiwan National Defence Volunteer Association) and two to the Manchurian Coast Guard at Eikou (Yingkou) along with an example of the redesigned KR-2 version.

A **DH 85 Leopard Moth** (130 hp Gipsy Major) cabin monoplane (c/n 7063) was sold to Major L W Learmount, Shanghai, and received its CofA on 21 June 1934. It was possibly not flown in China, however, and was registered at Kuala Lumpur as VR-RAE on 13 May 1935. Leopard Moth c/n 7010 was sold to Japan in 1933 and must have been identical with M-303 that served with MKKK in Manchukuo.

The Far East Flying Training School bought two **DH 87 Hornet Moth** (130 hp Gipsy Major) cabin biplanes for use as trainers in 1937: VR-HCW (c/n 8129), registered on 23 August, and VR-HCX (c/n 8002), registered on 17 December.

Six **DH 89A Dragon Rapide** (200 hp Gipsy) twin-engine transport biplanes fitted out as ambulance aircraft (c/ns 6385 and 6388-6392) were purchased in 1937. Their CofAs were dated in November and December 1937. They were delivered through Hong Kong, three were flown into China in February 1938 and three in July. Another DH 89A (c/n 6444) was purchased for CNAC in 1939 (CofA dated 11 May 1939). CNAC did in fact use two of these Dragon Rapides (CNAC No.s 38 and 43 "Fuling").

Dewoitine

The **Dewoitine D 27C1** (500hp Hispano Suiza HS 12 Hb) single-seat fighter was demonstrated by Lioré-et-Olivier (LeO) at Mukden in 1930-31. It was imported by the Central Garage, a French concern, and arrived at Newchwang with pilot Surtel and mechanic Chereau in June 1930. It was purchased for the Manchurian Air Force on 20 July 1931. In January 1933 seven D.27/D.53s were offered to China, possibly to Fukien. In the event no order was signed, however. At the beginning of July 1935 the Kwangtung Government at Canton placed an order with LeO for 20 **D 500** (690 hp HS 12 Xbrs) single-seat fighter monoplanes, to be delivered in September and November 1935, but the order was finally declined because deliveries could not be made on time.

On 3 August 1937 a contract was signed with the Office Francais d'Exportation de Matériel Aéronautique for 24 **D 510C** (860 hp HS 12 Ycrs) single-seat fighter monoplanes. They were built by SNCASE (c/ns 1C-24C) and shipments to Haiphong were as follows:

Date	Ship	Aircraft
2.11.37	"Sphinx"	C/ns 1-2C
23.12.37	"Si Kiang"	C/ns 3-6C
20.2.38	"Sontay"	C/ns 7-10C and five cannon
10.4.38	"Yalou"	C/ns 11-14C
20.5.38	"Si Kiang"	C/ns 15-16C
20.6.38	"Min"	Cc/ns 17-18C
17.7.38	"Yangtze"	C/ns 19-24C

Delivery to Kunming was delayed, but the aircraft were assembled by French mechanics at the workshops of the flying school there and finally went into service with the 41st Squadron and later the 17th Squadron.

DFS

DFS Kranich and **Rhönsperber** sailplanes were sold to China. Captain Wei Chao flew a Rhönsperber, which had been

Dewoitine D 510C.

Douglas O2MC No 7.

imported from Germany (probably in 1939), at Chengtu in October 1939 and at Chungking in December.

Dil

Russian pilot and aircraft designer Ivan Ivanovich Dil went with General Kolchak's White Russian Army to Siberia in 1918. He built a two-seat biplane with a 110 hp Le Rhone engine at Omsk in 1919, which he brought to Harbin in 1920. All Dil's aircraft were fitted with his own special invention for altering the angels of incidence during flight. On 7 July 1922 American Carvell reported on test flights made at Harbin with this aircraft by pilot D A Kudaienko. A first flight had been made on 8 June and a second followed on the 18th. The special Dil apparatus "gave exceptional results", including landings easily made in the space of 25 m.

This machine and three others were purchased for the Manchurian Air Force: one with 110 hp Le Rhone arrived in October 1922, and one with 130 hp Clerget and two with 300 hp Salmson, in July 1923

Douglas

Floyd N Schumaker of the American Aviation Corporation (known as "Fei Ma", or Flying Horse, Company) represented Douglas in China in 1930, but from 1933 the company was represented by the Inter-Continent Aviation, Inc. The first and also the most numerous Douglas type acquired by China was the two-seat O-2MC observation and light bombing biplane, an export version of the Douglas O-38. Schumaker sold ten **Douglas O-2MCs** (Pratt & Whitney Hornet A) (c/ns 915-924) to the Nanking Air Force, which were delivered in June 1930 (export licence dated 12 April 1930). A second order for 20 **O-2MC2s** (P&W Hornet A with Townend ring) (c/ns 1049-1068) was placed in May 1931 and these aircraft left the USA in July and arrived in China in August-September the same year.

In August 1932 five **O-2MC3s** (P&W Hornet B1) (c/ns 1127-1131) were delivered to the Canton Air Force. Chang Huei-ch'ang had ordered them originally and attempted in vain to have them delivered to his air force on Hainan. Twelve **O-2MC4s** (450 hp P&W Wasp C) (c/n 1162-1173) were acquired by Nanking and were delivered to the Central Aviation School at Hangchow in January 1933. The CAF took delivery of 12 **O-2MC5s** (450 hp P&W Wasp C1) (c/ns 1336-1347) in 1934 (probably assembled in Shanghai in June-August) and 22 **O-2MC6s** (Wright R-1820-E Cyclone) (c/ns 1379-1400) in 1935. The O-2MC6s were assembled by CAMCO. A single **O-2MC10** (Wright R-1820-F21 Cyclone) was supplied in 1936, probably as a pattern aircraft for licence production at CAMCO and about 70 O-2MCs were built in China. In 1937 the O-2MC served with the 3rd, 4th, 5th, 13th, 15th, 20th, 31st and 32nd Squadrons.

CNAC received two **Dolphin** (Pratt & Whitney Wasp S3D1) twin-engine eight-place passenger transport amphibian, c/ns 1348 and 1349 (NC14239 and NC14240), from Pan American Airways late in 1934 or early in 1935. They received CNAC fleet numbers 21 and 22 and were named "Kwangtung" and "Fukien", respectively.

The **DC-2** (875 hp Wright SGR-1820-F52 Cyclone) twin-engine passenger transport monoplane was used by CNAC, but also by the CAF. The CNAC DC-2s had accommodation for pilot, co-pilot, radio operator, steward and 14 passengers and the company operated the following DC-2s:

C/n	Fleet No and Name	Received	Previous identity
1369	24 Nanking	April 1935	Ex NC14297
1302	26 Chengtu	Oct 1935	Ex NC14269
1600	28 Szechwan	June 1936	
1567?	31 Chungshan	July 1937	
1568?	32 Kweilin	June 1937	
1598?	36 Kwangtung	1938	Ex CAF
1568?	39 Chungking	1939	Ex 32 Kweilin after being rebuilt
1586	40 K'angting	May 1939	Ex NC16048

C/n 1598 was sold on 28 May 1936 to the Canton Air Force and c/n 1560 was sold to the Nanking Government (Dr Kung) on 27 June 1936. Although named "Chung Mei" (Chinese-American), the last-mentioned aircraft became known as "The Flying Palace" because of its luxury interior. Two DC-2s, c/ns 1567 and 1568, arrived in Shanghai in June 1937, one of them on board the "Niels Maersk", which arrived on 26 June. The other machine had arrived a little earlier, but had been damaged during transport and needed repair. C/n 1586 was purchased second-hand from the Charles H Babb Company in March 1939.

CNAC acquired three **DC-3s** (1,000 hp Wright GR-1820 Cyclone) prior to the outbreak of the Pacific War in 1941:

C/n	Fleet No and Name	Received	Previous Identity
2135	41 Chiating	October 1939	
2148	46 Emei	January 1941	Ex-Air France
2261	47	July 1941	Ex NC19971

Chinese-Soviet airline Hamiata used two Aeroflot DC-3s from 1938 and two C-47s from 1943: URSS-M136, later URSS-M (c/n 2031), URSS-M137, later URSS-N (c/n 2043), URSS-P (c/n 6004) and URSS-R (c/n 4765).

Etrich (Motor-Luftfahrzeug-Gesellschaft)

In the autumn of 1911 two Chinese officers, Li Ju-yen (Zee Yee Lee) and Cheng Jin, visited an aviation exhibition at Wiener-Neustadt, Austria. Before the end of the year they purchased two **Etrich Taube** monoplanes for Sun Yat-sen, using funds from overseas Chinese. These aircraft were built by the Motor-Luftfahrzeug-Gesellschaft and arrived in China at the end of 1912, where they were assembled by Li's mechanic Leopold Schoettler.

Fairchild

Fairchild was represented in China by the Hosken Trading Company. A **Fairchild 22 C7A** (95 hp Cirrus) two-seat open high-wing monoplane (c/n 1016) was sold by Fairchild on 24 November 1931 to "China National Airways". According to an American intelligence document a Fairchild 22 was in private use in Peking by 1935 and Chang Hsueh-liang was reported to have a Fairchild "Commercial" at Peking in 1933. It seems that the name "China National Airways" was used as a front.

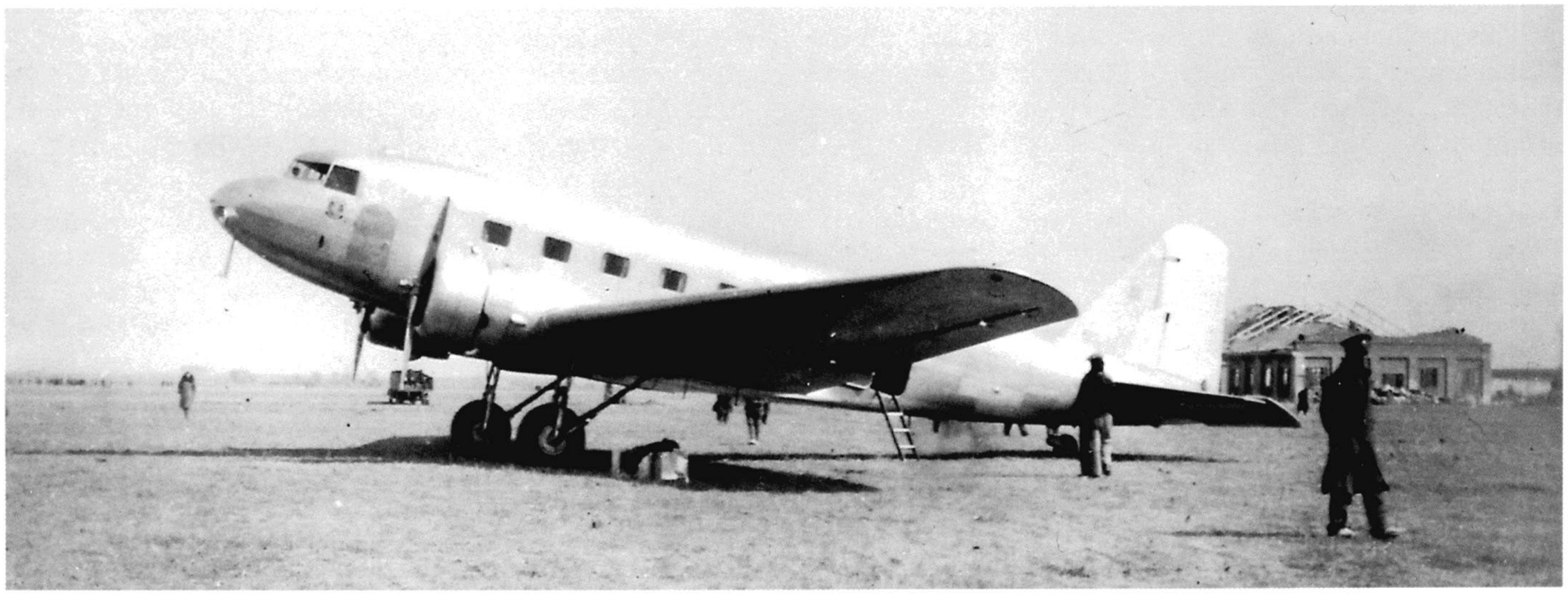
In December 1930 the Nanking Government was reported to have purchased four **KR-34-CA** (165 hp Wright J-6-5) two-seat light observation and bombing monoplanes, which had been converted into single-seaters with two forward-firing Colt machine guns and a bomb rack under the fuselage. However, Nanking was not the real customer for these aircraft. They had in fact been sold by L E Gale to the Hunan Provincial Government already in October. Only two were delivered there, however, and the remaining two were instead re-sold to Szechwan and delivered there in November 1931.

Pan American Airlines ordered six of the **F-91** (750 hp P&W Hornet S2E-G) 10-place single-engine high-wing amphibian off the drawing board for use by their subsidiaries in China (four for CNAC) and Brazil. This order was cancelled in 1935, however, when new US safety regulations were passed, proscribing the use of multi-engine aircraft only for passenger services.

Fairey

In November 1929 there were plans to sell three ex-RAF Fairey IIID two-seat general-purpose biplanes to China and an export licence for one more was discussed as well, but nothing came out of this.

A **Fairey IIIF Mk IIIM** (450 hp Napier Lion IXA), G-AABY (c/n F.1129), was shipped out to Arnhold & Co in 1930 for use as a demonstrator. It arrived in April but



A still unmarked Douglas DC-2 in China.

The Fleet 10 trainer was widely used in China. (CAHC)

crashed on the first take off attempt and was returned to England. The **Gordon** (525 hp AS Panther IIA) was a re-engined Fairey IIIF. C/n F.1515 arrived in China, probably in April 1931, as a demonstrator for Arnhold & Co. By June 1932 this aircraft was being assembled in Hong Kong. On 20 August it crashed with Arnhold Company pilot W E F Jones at the controls near Kai Tak and was completely wrecked.

The **Fox IV** (525 hp Rolls-Royce Kestrel IIMS) was a two-seat reconnaissance-fighter version of the Fox light bomber. Demonstrator G-ABYY (c/n F.1842) was sent to Hong Kong, where it arrived in April 1934, and was used for several sales tours. The Far East Aviation Company, which became the Aircraft (China) Ltd, now represented Fairey in China and the Fox was demonstrated by AV Harvey at Hungjao, Shanghai, in June-July, at Liuchow, Kwangsi, and then by A D Bennett at Nanking and Nanchang. On 17 February 1935 Bennett showed the Fox privately to Minister of Finance H H Kung. Later in February it was at Nanning and then it went to Canton, where it was sold. It crashed during the Canton Air Force defection on 18 July 1936.

Farman

The first Farman in China was Belgian van Dorn's **Farman II** (50 hp Gnome) that made the first flight in Hong Kong on 18 March 1911. It is possible that the Chinese Government purchased six Farman biplanes early in 1912, but these do not seem to have been delivered.

In the summer of 1931 French Vicomte de Sibour flew from Paris to Peking and back and he also visited Nanking and Shanghai. In August 1932-January 1933 he made another flight to Africa. Later in 1933 de Sibour (representing the Aero Trading Company in Hong Kong) presented his **Farman F 291** (300 hp Gnome-Rhone 7 Kb) single-engine five-seat transport monoplane F-ALER "Safari IV" (c/n 2/7262) to the Fukien Government.

An American report dated March 1935 attributed the aviation school at Changsha with a 230 hp Farman cabin plane. If correct, this ought to have been a F 190-series machine, but the information has not been confirmed.

FBA

See under Schreck.

Felixtowe

The Aircraft Disposal Company (Handley Page) contract with the Chinese Navy that was signed on 9 December 1920 included 30 **Felixtowe F.3** (350 hp Rolls-Royce Eagle VIII) flying-boats, but was later cancelled.

Fiat

Fiat was represented in China by G H Lautenberg of the Compagnia Italiana D'Estremo Oriente (CIDEO), Shanghai. He secured a contract for 20 **Fiat BR 3** (1,000 hp Fiat A 25) single-engine bomber biplanes on 30 June 1932. It was signed by T V Soong and Comte Ciano, Italian Charge d'Affaires in China. The aircraft were paid for out of the refunded portion of the Italian Boxer Indemnity Fund. A further ten BR 3s were originally to have been ordered to equip a total of three squadrons.

The first six Fiats arrived at Hangchow and a Fiat pilot and a mechanic were sent out to assemble and test them. The first aircraft was ready in January, a further six arrived in February and the rest a little later. BR 3s with Italian serials MM20080-20087 were included. Apparently a further three or four machines were acquired later in 1933. The Fiat bombers were issued to the 1st Squadron.

Fleet 7.

In the summer of 1933 Lieutenant Cuss demonstrated a **CR 30** (600 hp Fiat A 30 RA) single-seat fighter biplane, which had reached Hangchow in June. It was later presented to the CAF. Early in 1934 CIDEO negotiated with the Nanking Government for two CR.30s, 12 CR.32s and 12 CR.40s. The exact number of **CR 32** (600 hp Fiat A 30 RA bis) single-seat fighter biplanes delivered to China is not known. It seems that an initial nine were ordered in 1934, but thirteen (?) were delivered early in 1935 and they were assigned to the 8th Squadron. Their number was soon reduced by the loss of five aircraft in ground accidents and three additional aircraft were acquired as replacements. Known CAF s/ns: 801-812.

In September 1937 the Aeronautical Affairs Commission requested the delivery of 50 **G 50** (840-960 hp Fiat A 74 RC38) single-seat monoplane fighters, which had been offered by Fiat, and 20,000 Italian bombs, but the request was ignored. In 1939 a captured Japanese **BR 20** twin-engine bomber was taken on charge by the CAF.

Fleet

Fleet aircraft were built both by Consolidated in the USA and by Fleet Aircraft of Canada, and the Consolidated Aircraft Corporation sold both Consolidated and Fleet aircraft in China. The Fleet was a two-seat training biplane and there were four different, but rather similar versions in China:

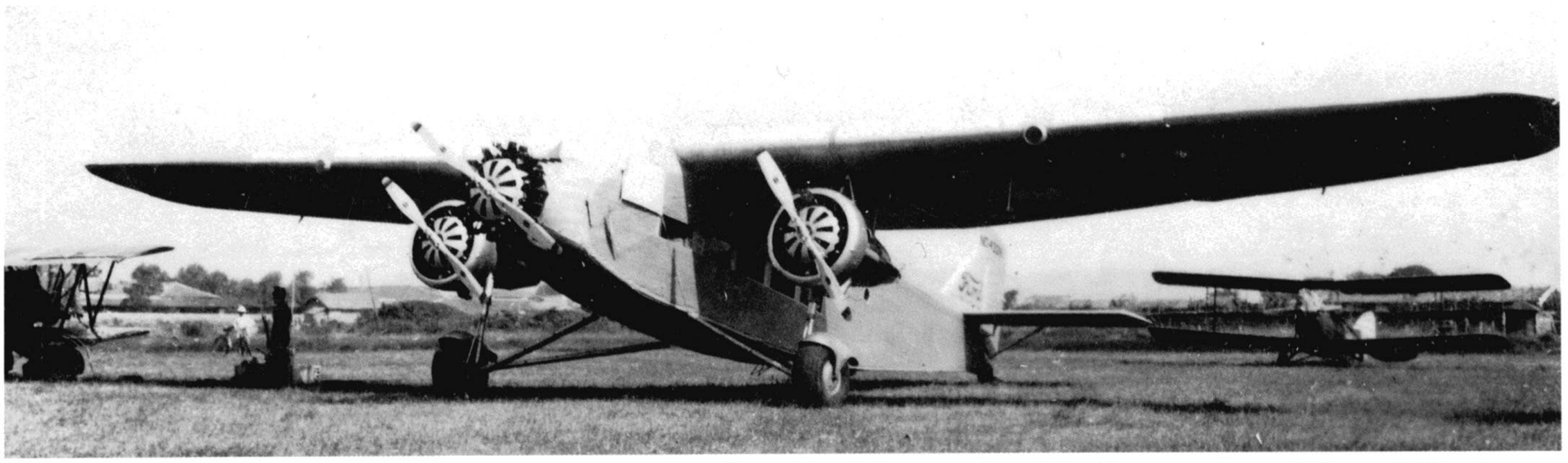
Fleet 2 (100 hp Kinner K-5)
Fleet 7 (125 hp Kinner B-5)
Fleet 5, or F5/ Canadian Fleet 10A (100 hp Kinner K-5)
Fleet 10/ Canadian Fleet 10B (125 hp Kinner B-5)
Fleet 11/ Canadian Fleet 10D (160 hp Kinner R-5)

In June 1930 it was reported that one Fleet aircraft was soon to go to China for demonstrations. During the aviation pageant in Nanking in April 1931 Robert Short demonstrated a Fleet trainer, which Weston Bert Hall was attempting to sell. This was probably **Fleet 2** NC706V (c/n 272). This aircraft seems to have been sold to the Canton Air Force, which had a Fleet trainer with a 110 hp Kinner engine by December 1932. Two **Fleet 5s** were bought second-hand by the Canton Government in 1933 and another six **Fleet 10As (US Model F5)** (c/ns probably in the range 70-76) were ordered in March 1934 and delivered later in that year. It seems that the Kweichow Province acquired a pair of Fleet aircraft as well.

In the meantime 15 Fleet 10s (possibly c/ns 413-427) that had been ordered for the Nanking Air Force's Central Aviation School at Hangchow were delivered in August 1932 by Consolidated's representative Carl A Nahmmacher. The shipping boxes were transported on junks to the Shanghai docks and then by road to Hungjao aerodrome, where the aircraft were assembled and test-flown. They were then flown to Hangchow. Another 15 were ordered in January 1933 and delivered in March (probably c/ns 441-455), and a further five arrived in January 1934. Fleet 10 c/n 438 received a US export CofA in 1932 for export to Carl A Nahmmacher, Shanghai, as a demonstrator, and c/n 456 (US Reg 211Y) received a similar CofA in 1933.

On 11 December 1934 an order for 30 Canadian-built **Fleet 10Bs (US Model 10)** was announced (c/ns probably including 33-50), along with parts for another 20 to be assembled by the Naval Aircraft Factory in Shanghai. The Canadian aircraft were shipped from May 1935. One **Fleet 11**, c/n 513 (NR13935), was exported to China as well and one Fleet 10 from those assembled at Shanghai was apparently delivered to the China Flying Club.

In March 1936 it was reported that the Eastern Aviation Company in the USA had sold one Fleet "scout" to Yünnan. The CAF purchased another 50 Fleet 10Bs (c/ns 139-160



Ford Tri-Motor NC432H, the second aircraft of this type that Chang Hsüeh-liang purchased for his personal use. (Wings of China)

and 162-189) in 1937, which were delivered from February 1938[1]. Up to 18 June, 39 had been imported trough Hong Kong. A second batch of 50 Fleet 10Bs was apparently ordered early in 1939 but this contract was cancelled in favour of an order for the Ryan STM.

The No 3 Military Aircraft Factory was set up at Chengtu in 1939. By October 1941 a batch of 30 Fleet trainers was under work and was to be completed by April 1942. It seems that these aircraft were produced from US-made components but the Chinese-built copy was called the "**Research-Trainer No 1**".

Focke-Wulf

In 1927 a German firm in Tientsin offered the Focke-Wulf A 16 (100 hp engine) light transport as a bomber to Manchuria. The Nanking Government ordered 20 **Focke-Wulf S 24a Kiebitz** (75 hp Walter NZ-60) two-seat training biplanes in December 1928. Nine (c/ns 64-72) were sent by rail on 14-15 February 1929 to Hamburg and the remaining eleven (c/ns 73-83) followed on 22 March. The second batch left Hamburg on board the "Ilmar" on 26 March. These aircraft were test-flown at Shanghai by Fritz Loose and were then delivered to Nanking.

In the mid-1930s a number of **FW 44F Stieglitz** (150 hp Siemens Sh 14A) two-seat training biplanes were acquired by the Canton Air Force. Three (c/ns 773-775) were ordered from F Feld & Co in March 1935, followed by another six (c/ns 1040-1045) in July. The first trio arrived at the end of June and was demonstrated by Gerd Achgelis, whose flying stunts thrilled a large crowd of spectators and many foreign residents. They were handed over on 29 June. Another three FW 44Fs (c/ns 981-983) and seven FW 44Js (c/ns 1267-1273), were ordered by Canton before February 1936 and werw shipped to China in April and May 1936.

Canton also ordered one example of the **FW 58K-3 Weihe** twin-engined general-purpose monoplane from F Feld & Co. The K-3 (c/n 1197) was an export version for China and it was ready for delivery by October 1936 and was shipped on 16 November. About July 1939 Eurasia signed a preliminary contract for four **Fw 200 Condor** four-engined passenger transports, but they were never delivered and five Fw 200KC-1 Condors (c/ns 0017-0021) ordered by Manchukuo in December 1938 suffered the same fate.

Fokker

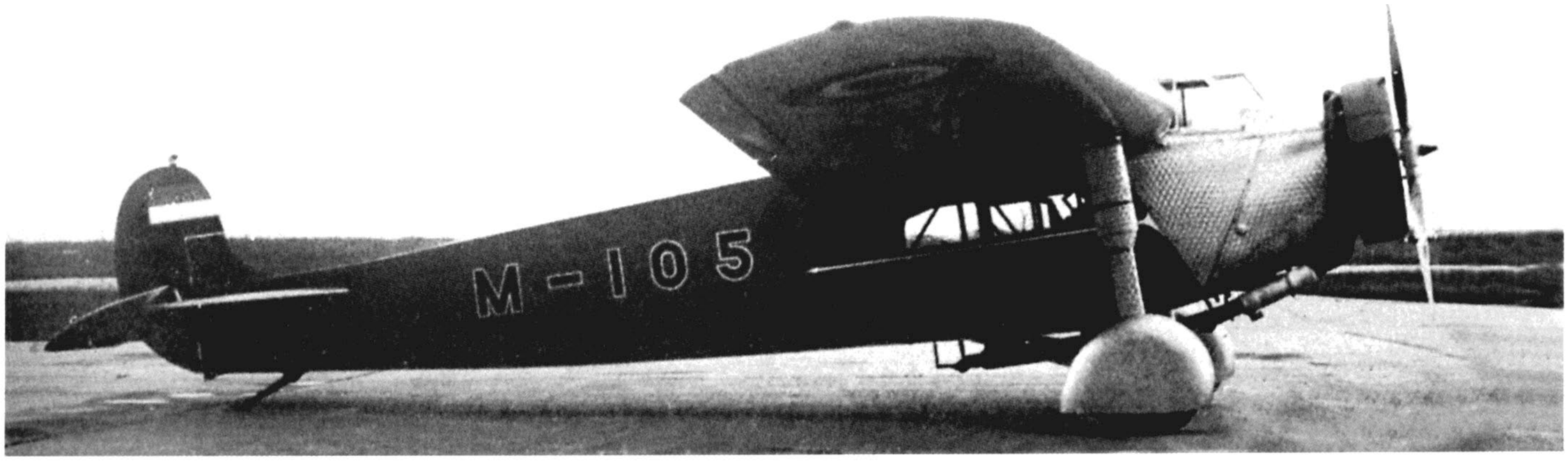
Three **Fokker D VII** (185 hp BMW III) single-seat fighter biplanes were overhauled by the Comte firm in Switzerland and sold to Manchuria in 1924. The aircraft were formally purchased by the father of a Manchurian flying student, who acted as a front for Chang Tso-lin. They arrived at Newchwang in July 1924.

In December 1930 Fokker offered to deliver the D XVI, C VE, F VIIa and F VIIb-3m to Manchuria. On 4 April 1931 Fokker and Marshal Chang Hsueh-liang signed a contract for a factory, 30 Fokker D XVI fighters and 30 Fokker C VE reconnaissance aircraft and one of each type was to be brought to Mukden for demonstrations. The **D XVI** (460 hp AS Jaguar VIIA) single-seat fighter biplane (c/n 5245) arrived on 25 July 1931. It had earlier been delivered to Italy but had been returned and was shipped to Manchuria in May 1931. After assembly it was test flown by Fokker pilot G Sandberg in August-September. It was then demonstrated, but was never taken over.

The **C VE** (AS Jaguar IIA) two-seat reconnaissance and light bombing biplane (c/n 5288) arrived at Tientsin and was sent to Peking early in October, after the Japanese occupation of Mukden. On 16 October the contract was annulled and both aircraft ended up with MKKK in Manchukuo and were numbered M-301 and M-302, respectively.

MKKK in Manchukuo used two **Fokker F VII-3m** (Wright Whirlwind) three-engined eight-passenger transport monoplanes from 1932 and the Hui-t'ung Company had two from 1936. The **Fokker Super Universal** (460 hp Nakajima Kotobuki 2-kai-1) single-engined transport monoplane was built under licence by Nakajima in Japan, production later being transferred to Manchu Koku at Mukden, where the first two machines were ready in Novenber 1933. One was presented to Prince Teh of Inner

1 According to one source 108 Fleet 10Bs (125 hp Kinner) had been ordered from Canada.



Fokker Super Universal M-105 of the MKKK in Manchukuo.

Mongolia in July 1935. About 17 original or Japanese-built Super Universals and some 66 modified Manko 1 and 2 Type aircraft were in service with MKKK. Hui-t'ung had five or six from 1936 and the China Aviation Company used Super Universals as well.

On 26 March 1932 F Feld & Co sold nine Fokker military aircraft of unknown type(s) to Canton, but none was delivered.

Ford

In December 1929 Ford representative J V Crowe arrived in China to sell the **5-AT Ford Tri-Motor** 11-passenger transport monoplane. On 15 February 1930 a Ford 5-AT-C (425 hp P&W Wasp), c/n 5-AT-65 (US Reg 406H), was shipped to Tokyo for a six-month demonstration tour in Japan and China (pilot Perry G Hutton). It flew to Mukden in the summer, arrived in Shanghai at the end of October and was then shown in Nanking. After this it was sent back to Mukden and was purchased by Chang Hsueh-liang in December. Hutton became his personal pilot and an American mechanic was hired. Chang purchased a second Ford, 5-AT-D c/n 5-AT-99 (NC432H), a company demonstrator with luxury interior, which was shipped on 24 March 1932 and had arrived and been assembled by 22 April. It left Hong Kong for Peking with Hutton at the controls on the following day.

CNAC acquired three Fords in 1935: Ford 5-AT-D c/n 5-AT-115 (NC9658), sold to CNAC in January, c/n 5-AT-116 (NC9659), shipped on 1 August, and c/n 5-AT-101 (NC15551), sold on 23 October. The first, which had actually been paid for by the Ministry of Communications and then turned over to CNAC, arrived in March. In CNAC service they became No 23 "Kunming", 25 "Hankow" and 27 "Shanghai".

Two others were acquired from American Airlines by the CAF for the Central Aviation School in April 1936: 6-AT-C c/n 6-AT-3 and 5-AT-C 5-AT-79A, ex NC8486 and NC8485. In 1936 the three Fords on the CAF inventory were numbered 1, 2 and 3. One was used by the 10th Squadron in 1937. The three original CNAC Tri-Motors were lost in 1936 and 1937, but in January 1937 CNAC received No 29 "Kweichow", which was followed in December 1939 by No 42. These were probably the two CAF machines.

One Ford Tri-Motor flew (trmporarily?) with the name "K'ang Jih" (Resistance Day).

Friesley

In 1922 Friesley (Harold Friesleben) Aircraft ended operations in bankruptcy. The **Friesley Falcon** (400 hp Liberty 12) 12-place twin-engine biplane, which had first flown in 1921, was sold to the "Chinese Government" for $3,000 at an auction on 24 May 1922 and was prepared for shipment to China. Very little is known about the fate of this aircraft, but it was reported to be in transit to Fuchow in August 1922. It had apparently been purchased by the Canton Government.

General Aviation

The only example that was built of the **Clark GA-43** (Wright Cyclone R-1820) single-engined 10-passenger monoplane was sold to Japan and was registered J-BAEP (c/n 7500, ex X-775N). In January 1934 MKKK in Manchukuo acquired it and assigned the serial M-701, but it was lost in a crash before delivery on 18 May 1934.

Gloster

A contract was signed with Aircraft (China) Ltd for 20 **Gloster Gladiator Mk I** (795-825 hp Bristol Mercury IX) single-seat fighter biplanes in August 1937. The contract included an option for another 16 machines, which was soon taken up. All 36 were to be shipped within four months. Gloster pilot M Summers arrived in Hong Kong on 11 November to assemble the first batch of 20, of which nine arrived at the same date. The other 11 reached Hong Kong later the same month, but were diverted to Canton for assembly. By 6 January 1938 all 20 Gladiators of the first batch had been tested and handed over to the CAF.

The last 16 Gladiators were delivered in January 1938 and were assembled in Canton until March. In the autumn of

Both the Fokker D XVI and C VE were demonstrated at Mukden in 1931 and finally ended up in Manchukuo's aircraft inventory.

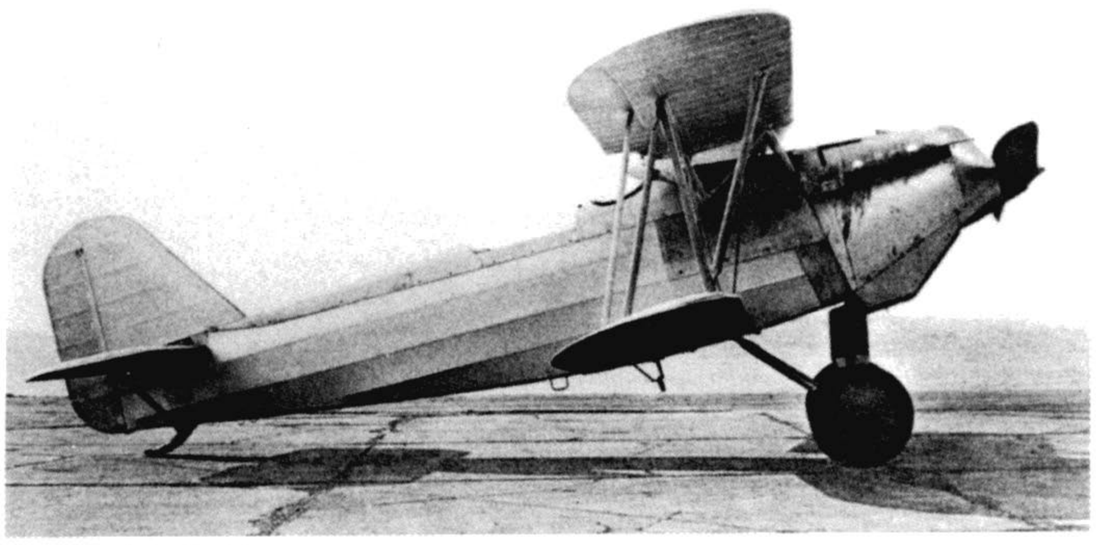
1938 there were apparently some plans to divert another 15 machines to China from RAF orders, but this was not carried out. The Gladiators were assigned to the 28th and 29th, and later 32nd Squadrons.

Handley Page

On 13 December 1918 the Pekin Syndicate, Ltd, offered to the Aviation Department of the Board of Communications six **Handley Page O/7** (350 hp Rolls-Royce Eagle VIII) twin-engined passenger transports. An agreement was reached on 24 February 1919 and the aircraft were to be delivered within four months. The first machine was test flown on 5 July as G-EAGN (c/n HP-1) and was shipped to Shanghai on 25 August. C/ns HP-2 to HP-6 were shipped during the period until 20 September. They were erected at Nanyüan and the first was flown over Peking on 6 December 1919. All were ready by the end of February and they were named after the short names for railway lines: "Ching Han" (Peking-Hankow), Ching Feng", "Ching Sui", "Tsin Fu", etc. In July 1920 three were sent to Mukden and three to Paoting. At least two were later taken by Feng Yü-hsiang to Kalgan.

The Aircraft Disposal Company (Handley Page) contract of 9 December 1920 with the Chinese Navy, which was not accepted, included 25 **Handley Page 'S' Type Seaplanes** (350 hp Rolls-Royce Eagle VIII).

Hanriot



Heinkel HD 61a.

Late in 1923 Manchuria acquired three second-hand **Hanriot H 32** (120 hp engine) two-seat biplane trainers from the Swiss firm Comte. They arrived at Newchwang in July 1924. In May 1928 four old **HD 14** (80 hp Le Rhone) two-seat biplane trainers were delivered to the Canton Air Force.

Heinkel

One **Heinkel HD 24** (230 hp BMW IV or 210 hp Junkers L2) two-seat training biplane floatplane was delivered to China by Firma Buddick, Floeck & Co, Shanghai. It arrived in Tsingtao on board S/S "Bertram Rickmers" on 23 January 1927. It had been purchased for the Hydrographic Institute of the Sea Customs Authority but was seized by Shantung and was taken to Tsinan, where it was by the end of February 1928. It was at that time fitted with a wheel undercarriage. In May 1928 it went with the other aircraft of the Shantung Air Force to Mukden and was incorporated into the Manchurian Air Force.

Another Heinkel HD 24 (310 hp Junkers L5) floatplane was ordered from Firma Eickhoff & Co by the Chinese Navy and arrived in Shanghai on 25 December 1928. It was test flown by German pilot August Haensel in February 1929. One of these aircraft was probably HD 24b c/n 285 and the other could have been an example built by Svenska Aero in Sweden (possibly c/n 49), but this is not confirmed in any way.

In 1927 seven Heinkel aircraft of unknown type with 450 hp engines, which were to be built by Svenska Aero, were ordered, or intended to be ordered, by Shantung, but this deal fell through.

In July 1931 an **HD 61a** (500-660 hp BMW VI 6,0 Z) (c/n 322), an export version of the He 45B two-seat observation and light bombing biplane, was imported for demonstrations by the Exportgemeinschaft der Deutschen Luftfahrtindustrie. It crashed and was completely destroyed at Nanking on 22 August, however, with German pilot von Oertzen at the controls.

It has not been possible to find out the truth about the **He 66**, the export version of the He 50 dive-bomber biplane. Twelve were allegedly ordered in July 1934, but not delivered.

Heinkel He 111K bomber. Six were ordered by the Canton Government. They were issued to the 19th Squadron, CAF, in 1936. (Wings of China)

Published information that a second order for 12 was fulfilled by sending ex-Luftwaffe He 50Bs (SAM 322B), which arrived in China in January 1936, is pure fiction. No trace has been found of these aircraft in German or any other archives. If they were really ordered (by Canton?) they were certainly not delivered.

The Canton Government ordered six examples of the **He 111K**, the export version of the He 111A (750 hp BMW VI) twin-engined bomber, from F Feld & Co in September 1935. They arrived in the summer of 1936 with seven German pilots led by Heinkel test pilot Gerhard Nitschke, and two mechanics, but delivery was delayed by the Nanking take-over of the Canton Air Force. Four machines were received by the CAF in October and two in November. They were assigned to the 19th Squadron of the 8th Air Group. The last remaining He 111 was taken out of storage at Chengtu in December 1943 and flown to Kunming, where it was modified it into a transport for 10 passengers and fitted with Wright R-1820 Cyclone engines for use by CATC (fleet no Chung-2).

The **He 116A-0** (270 hp Hirth HM 508D) was a four-engine passenger transport. Two were sold to Japan and were registered J-BAKD (He 116 V5) and J-EAKF, the latter to the Kwantung Government Office in Japanese-occupied Manchukuo. Both were transferred to MKKK in May 1938 and flew from Tokyo to Hsinking on 11 May.

In August 1937 a Chinese contract for 50 **He 118** dive-bombers was discussed, but in the event no order was placed.

Henschel

On 18 October 1937 Hitler decided to stop further deliveries of arms to China, but this was changed again two days later, provided that the deliveries could be kept a secret to Japan! On 3 November the same year 12 **Henschel Hs 123A-1** (630-730 hp BMW 132A) single-seat dive-bomber biplanes originally scheduled for delivery to Portugal were ordered through the HAPRO firm for the CAF. They were to have been delivered immediately, but there was a delay until January before the aircraft could be sent from Bremen and via Italy, due to the prevailing political conditions.

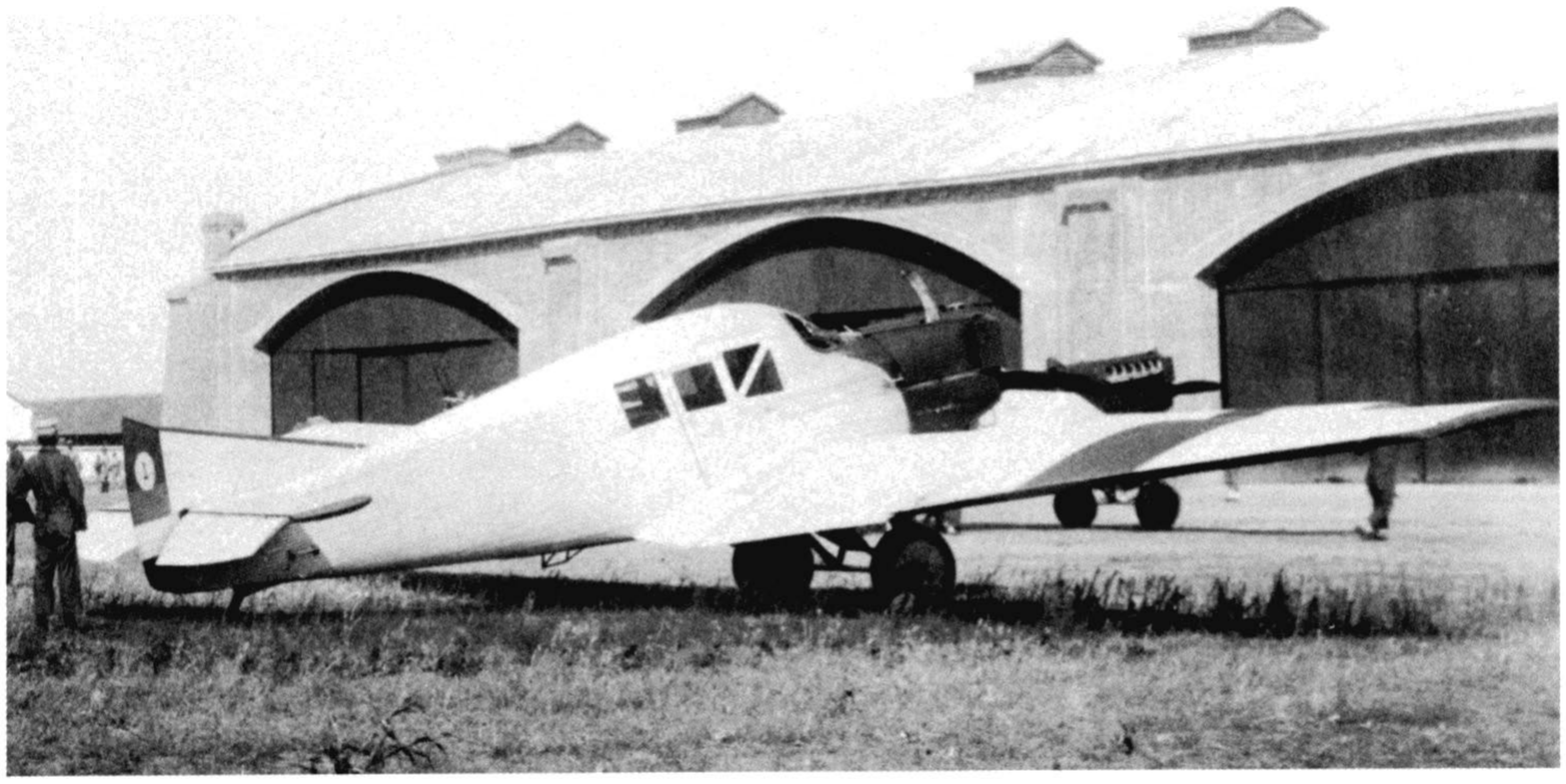
By March 1938 eight had arrived in Hong Kong and had been sent to Canton and the other four followed in April. A Henschel pilot, von Winterfeld, and two mechanics arrived on 11 February to assemble and test-fly the aircraft at Hankow. The Hs 123s were handed over in April and May and were assigned to the 15th Squadron, but they remained in service for a short period only.

Ilyushin

The Soviet Union supplied 24 **Ilyushin DB-3** (900-950 hp M-87A) twin-engined bombers to China in 1939. The first 12 were delivered in June and the second group of 12 followed in July. They were initially assigned to the 10th and 14th Squadrons of the 8th Group. The formal order for these aircraft was dated 20 June 1939.

Junkers

Many Junkers aircraft of different types saw service in China. Two examples of the **Junkers F 13** (185 hp BMW IIIa, 220 hp Junkers L2, 310 hp Junkers L 5) six-seat transport monoplane was sent by the Soviet Union to Canton. One was former R-RDAO (c/n 648), which had participated in the Moscow-Peking flight of summer 1925. The other machine was probably c/n 677, an ex-military aircraft that was converted into a floatplane in April 1926 before



Junkers F 13 s/n 1 serving with the Shantung Air Force at Tsinan.

delivery. C/n 648 was later returned to the USSR and it was finally registered CCCP-128. The other machine remained with the new Canton Air Force in 1927.

Until the autumn of 1924 Junkers was represented by Bunsen & Company (Chinesische Handels-AG) and then by Siemsen & Company. One F 13 was ordered for Shansi on 14 April 1925 and c/n 678 (ex D703) was shipped from Germany. It was seized by Shantung in February 1926, however, and was paid for by that province in June 1926. A new machine, c/n 774 (ex D812), which had previously been used as a demonstrator in Siam, was shipped from Bangkok on S/S "Bertram Rickmers". On 23 January 1927 it arrived in Tsingtao and was immediately taken by Shantung as well and it was later paid for by them. A third F 13 arrived in March 1928. It was delivered to Taiyüan in April and entered service with the Shansi Air Force.

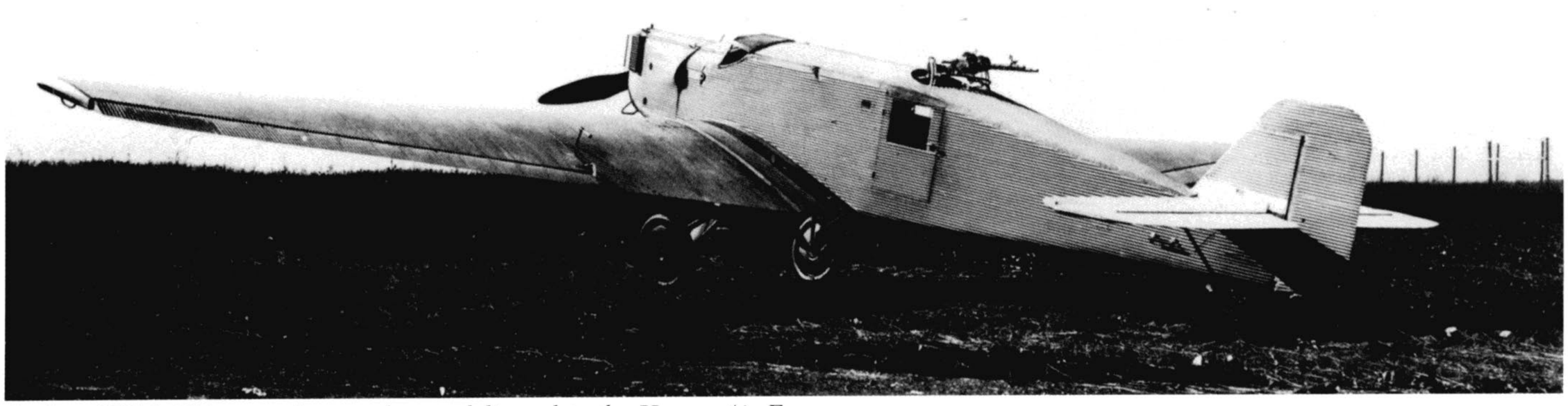
The Nanking Government ordered two F 13s fitted with both floats and wheels on 17 November 1928 and F 13ge c/ns 2038 and 2039 were delivered in April 1929 by Junkers pilot Fritz Horn. F 13ge D-2151 (c/n 2042, ex C-PAAC) was purchased for a good-will flight from Berlin to Nanking, but crashed on 24 September 1931 near the Indian coast, shortly after leaving Karachi. Eurasia put two F 13s in service in March 1931. These were c/ns 746 and 747 (ex D-346 and D-600), which became EU IV and EU III, respectively. In November 1931 the Sinkiang Government was negotiating the purchase of two F 13s, but no order was placed.

The **A 20** (220 hp Junkers L2) and **A 35/K 53** (310 hp Junkers L5) were essentially similar, a two-seat reconnaissance and light bombing monoplane. Shansi ordered one on 14 April 1925 and c/n 872 (ex D721) was shipped. This machine was seized by Shantung along with the F 13 in February 1926 and was finally purchased on 13 June 1926. The steamer "Etha Rickmers" arrived with a new A 20 sent by AB Flygindustri in Sweden and intended for Shansi on 5 January 1927, but was forced to land the aircraft at Tsingtao. It was captured (and paid for) by Shantung as well and was converted to take armament by a Junkers engineer.

Shantung signed a contract for another six machines of the military K 53 version. C/ns 1071-1075 and 1077 were shipped from AB Flygindustri on 20 June 1927 and arrived about 1 September. Four more, c/ns 1079-1081 and 1085, were later ordered and left the factory on 7 May 1928. By the time these aircraft reached China on board SS "Bestik" in July 1928 the Shantung Air Force had already been absorbed by the Manchurian Air Force and they were delivered directly to Mukden.

Canton had been negotiating the purchase of a number of Junkers aircraft since June 1928 and a purchasing mission had been sent to Germany in July. Junkers offered three K 53s, of which two were to be supplied in the form of kits for local assembly in Canton. The equipment for an aircraft factory with a capacity of three to six K 53s per month was to be supplied as well. An order for a single example was finally placed and confirmed on 11 December 1928. This K 53 was c/n 1091, which was shipped from AB Flygindustri in Sweden on 3 July 1929.

On 5 October 1928 three K 53s, plus five spare L5 engines and a repair workshop were ordered by a Nanking Government commission in Berlin and on 17 November Siemsen & Company received an order for another six K 53s with both wheel and float undercarriages. Fritz Horn was sent out as delivery pilot with two mechanics. On 8 February 1929 c/ns 1066 (ex S-71, temporary Swedish registration),



Junkers W 33. This armed example was delivered to the Honan Air Force.

Junkers K53 being prepared for delivery to the Nanking Air Force.

1067, 1068 and 1087-1089, all with both wheel and float undercarriages, left AB Flygindustri. C/ns 1076, 1078 and 1086 followed on 20 March. The first six K 53s and an F 13 were shipped from Hamburg on "Deike Rickmers" on 15 February. One of the K 53s was lost due to a production fault and c/n 1092, fitted out as a floatplane, was shipped on 18 March 1930 as a compensation. Six K 53s are initially issued to 3rd Squadron and three to 5th Squadron.

Shansi ordered a K 53, a W 33 and an A 50 in June 1930 and on 26 July K 53 c/n 1093 was shipped. It could not be delivered, however, because of the war between Nanking and Shansi, and was instead landed in Japan. In October Junkers tried without success to sell it to Mukden. On 15 August 1932 the Nanking Government impounded this K 53 at Loyang. It had been secretly purchased by General Liu Wen-hui in Szechwan and was on its way there, but was now taken over by the Nanking Air Force instead.

The **W 33** (310 hp Junkers L5) was a transport monoplane that could also be used as an auxiliary reconnaissance and light bombing aircraft and Siemsen & Company had offered to deliver six fitted out as bombers to the Nanking Government in 1929. Feng Yü-hsiang in Honan signed a contract for three examples with spare engines and a repair workshop on 18 January 1929. The first machine, W 33c c/n 2530 (the others were probably 2531-2532), was shipped on the "Deike Rickmers" and arrived in April 1929. It was assembled and tested at Shanghai and then flown by Junkers pilot Fritz Loose to Loyang. It was taken over by the Nanking Air Force after the Nanking-Honan war. The remaining two machines left Germany in March on board the "Ilmar", but because of the Nanking-Honan hostilities they were transhipped to Manila and stored there. The Nanking Air Force finally purchased them in December 1929. Two were used by Aero Survey as "Tse Liang 2" and "Tse Liang 7".

As already mentioned Shansi decided in June 1930 to purchase one W 33 for evaluation. W 33f c/n 2581 was fitted with armament by AB Flygindustri and shipped from Sweden on 26 July. Due to the outbreak of war with Nanking it was not delivered, however, and was instead landed in Japan and sold there (as J-BFUB). Siemsen first tried, without success, to sell the aircraft to Manchuria.

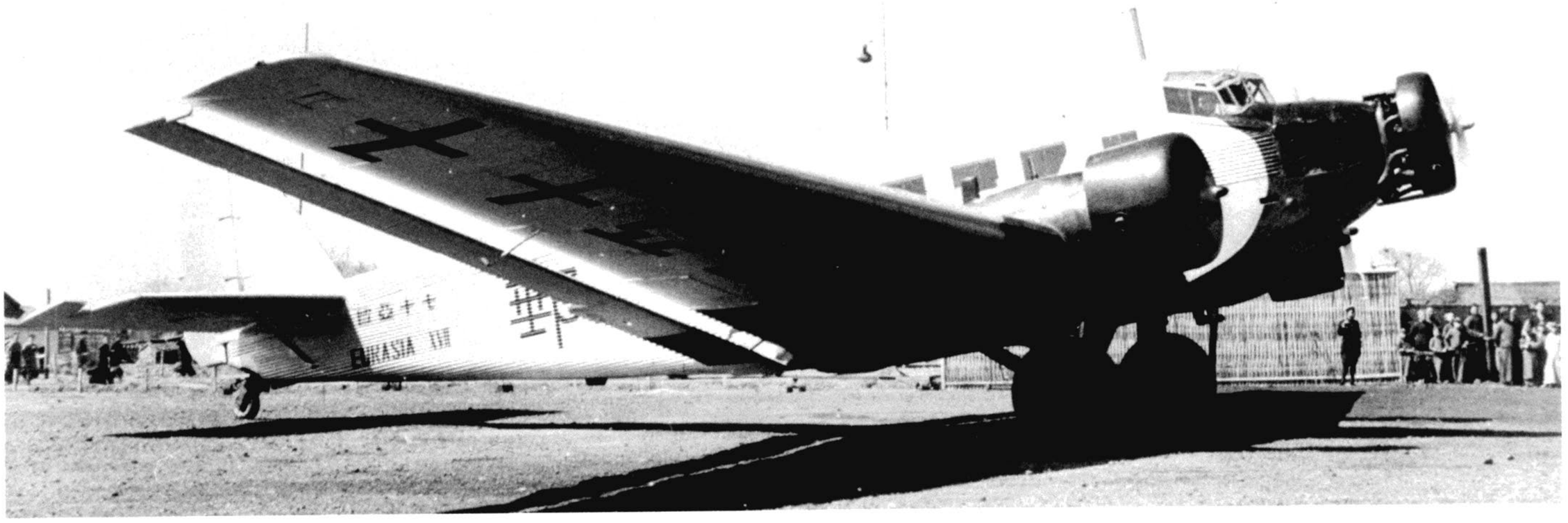
Eurasia used the following six W 33s between 1931 and 1933:

C/n	Fleet No	Delivery	Ex
2545	EU I	2.31	D-1696
2560	EU II	2.31	D-1827
2561	EU V	6.32	D-1839
2563	EU VI	7.32	D-1855
2564	EU VII	2.33	D-1894
2543	EU VIII	3.33	D-1695

The **W 34** (BMW Hornet A, P&W Hornet T2D2) was a W 33 fitted with a radial engine. Seven W 34s were acquired by Eurasia between 1933 and 1935, but one crashed in Germany before delivery:

C/n	Fleet No	Delivery	Ex
2737		-	D-4. Crashed 29.4.33 before delivery
2738	EU I	6.33	D-5
2739	EU II	6.33	D-7
2743	EU III	9.33	D-4
2746	EU V	3.35	D-UPOL
2763	EU III	3.35	D-UKAM
2830	EU VI	5.35	

The Junkers K 47 was demonstrated in China by Johann Riszticz.



Junkers Ju 52/3m EU XVII of Eurasia.

Four examples of the W 34hi version were acquired for aerial photography and used by the Nanking Government Survey Bureau (Aero Survey): c/n 2790, purchased by Shensi Province, which left AB Flygindustri on 7 November 1934, c/n 2826, shipped from AB Flygindustri on 4 January 1935, c/n 3341, delivered in Germany in October 1937 and an unidentified machine also delivered in 1937. These aircraft were probably used by the CAF. One Junkers, identified as s/n 271, was shot down by the Japanese on 26 October 1940.

The **K 47** (600 hp BMW Hornet A-2) two-seat fighter monoplane was offered to the Nanking Government by Siemsen & Co in 1929. It was planned to demonstrate a K 47 at Mukden and one example was shipped on the SS "Altai Maru" on 30 September 1930. It was landed at Shanghai in November, however, for demonstrations to the Nanking Government. It was flown in Nanking by Junkers pilot Johann Riszticz from January 1931 and also participated in the Air Pageant on 2 May. This machine was then purchased and another six K 47s were ordered in May.

The first aircraft crashed on or about 1 July with a Chinese pilot at the controls and Risztics in the back seat, but it was later repaired by the German mechanics instructor Boehler. The six new K 47s were shipped from AB Flygindustri on 4 June and arrived in Shanghai on 17 July and the first was test flown on 3 August. On 22 August Risztics crashed again with a K 47 in Nanking, apparently due to structural failure.

In the meantime the Canton Aviation Bureau had signed a contract with Siemsen & Co for three K 47s on 13 May. These machines differed slightly from those ordered by Nanking in that they were equipped with superchargers. They were shipped from Hamburg on the SS "R C Rickmers" on 4 July and arrived at Wusong on 22 August. They were confiscated by Shanghai customs and taken over by the Nanking Government, who paid for them. The ten Chinese K 47s were probably c/ns 3357-3360, 3364 and 3366-3370 and they were serialled P-1 to P-10.

In 1933 Siemsen & Co managed to sell a former test and demonstration aircraft, c/n 3356 (ex SE-ADL), which was delivered in July. The T'ien C'hu Seasoning Powder Factory presented it to the Government, but during the presentation ceremony on 15 July it was crashed by German pilot zu Castell. It was sent to Germany for repairs and was finally handed over and named "T'ien Ch'u No 1" in Shanghai on 18 March 1934.

Two float-equipped examples of the **A 50 Junior** (88 hk Armstrong Siddeley Genet) two-seat sport and training monoplanes were sent out to China for demonstrations. German pilot Hans Bertram, who was employed by the Chinese Navy, had asked Junkers for an offer for four A 50s, including two with float undercarriages. The two A 50s, which were shipped on board the "Atlas Maru", could not be landed in Shanghai, however, because Siemsen & Co was unable to arrange an agreement with the Navy and they were sent to Japan instead.

Another A 50, c/n 3531, was demonstrated by Riszticz from about 10 November 1930. It had been sent from Osaka and was the example that had originally been ordered by Shansi in June 1930. After shipment from Germany on 2 August it had been diverted to Japan when the Nanking-Shansi hostilities broke out. When K 47 "T'ien Ch'u" crashed it was decided to deliver the A 50 for free as a compensation. It was handed over with the repaired K 47 in Shanghai on 18 March 1934, was named "T'ien Ch'u No 2" and was presented to the China Aero Club.

One example of the **Ju 52/3m** (575 hp BMW Hornet, 660 hp BMW 132) three-engined passenger transport monoplane was acquired by the CAF and several served with Eurasia. After the German Foreign Ministry had decided to release a Ju 53/3m for a propaganda flight to China, D-ABAN (c/n 4044, ex D-3382) of Deutsche Lufthansa was sent out. It left Germany on 29 August and arrived in Shanghai on 6 September 1934. After a tour to Canton, Nanking, Peking, Tientsin and Tsingtao, it was finally sold to the Government in April 1935 for use by Chiang Kai-shek as a VIP transport. The Ju 52/3m and the K 45 bomber version had been offered to the Nanking Government already in 1931-32 and a new offer for six float-

equipped K 45Ws (Pratt & Whitney Hornet) was rejected in 1935.

Between 1935 and 1940 Eurasia received a total of ten Ju 52/3ms. The first, D-ANYK, arrived in Shanghai on 11 September 1935.

C/n	Fleet No	Delivered	Ex
5329	EU XV	9.35	D-ANYK
5104	EU XVII	10.35	D-AGES
5294	EU XVIII	1.36	D-AMAK
5472	EU XIX	7.36	D-AGEI
5502	EU XX	3.37	D-ALUE
5087	EU XXI	5.37	D-ASEV
4068	EU XXII	3.38	D-ABIZ
4074	EU XXIII	9.38	D-ASIS
4072	EU XXIV	2.39	D-AMIP
6014	EU XXV	10.40	D-ASFD

An order was placed in November 1937 for 20 **Ju 86K** twin-engined bombers, which were to be delivered before August 1938. After the outbreak of war in 1937 the Germans tried to find every possible excuse for not delivering the parts for these aircraft. The bombers were to have been completed by the Chinesish-Deutsche Flugzeug und Flugmotoren Fabrik AG (Chiflag) at Pinghsiang, east of Changsha. Production plans had originally included 54 of a military version of the Ju 160 and 24 K 85 bombers, but none of these aircraft were ever delivered. The 20 Ju 86s were to have been delivered secretly through the Hapro firm, but after all deliveries to China were halted in May 1938 they were finally seized by the German Government in September 1938 and delivered to the Luftwaffe instead.

The **Ju 86Z-2** (840 hp BMW 132Dc) passenger transport version of the Ju 86 was used by MKKK in Manchukuo. An initial three were ordered about October 1937 and another 14 in 1938 and 1939. Seven were delivered in 1938 and seven in 1939. The last lot of three (c/ns 860502-860504) were completed in September 1939 but could not be delivered due to the outbreak of the Second World War. An attempt to fly them out via the USSR failed and they were finally seized by the German Government in April 1941. In December the order was cancelled. MKKK serial numbers for the 14 delivered Ju 86s were probably M-210 to M-223. Three aircraft were re-engined with Mitsubishi Kinsei radials when the war made it impossible to obtain spare BMWs.

Eurasia received one example of the **Ju 160** (660 hp BMW 132) passenger transport monoplane. C/n 4215 (ex D-UVUX) was delivered in August 1935 and was taken in service at the beginning of October. It crashed after three months and was returned to Germany. MKKK received two ex-Japanese Army Air Force Ju 160Ds in 1937.

Kawasaki

On 27 July 1930 the Japanese Air Mission to Manchuria brought three single-engine **Kawasaki KDA-2 Army Type 88-I Light Reconnaissance Aircraft** (450-600 hp Kawasaki BMW VI) to Mukden. They were purchased by the Mukden Government for the Manchurian Air Force in July 1931.

Kinner

The Kinner firm was represented in China by L E Gale & Company, who brought the only example of the **Kinner P Sportster** or **Sedan** (210 hp Kinner C-5) two-seat cabin monoplane, NC12257 (c/n 1), to Shanghai. According to an American intelligence report dated 7 February 1936, it was stationed there at that time. It had probably been sold to the China Flying Club organised by the China Aviation Association, as it carried the inscription "Chung-kou hang-k'ung hsieh-hui" (China Aviation Association) on the fuselage. It was named was named "Chiu Kuo Hau Yi" (National Salvation No.1).

Klemm

Two **Klemm L 25 Ia** (40 hp Salmson) two-seat monoplanes were purchased for the Amoy Commercial Aviation School in 1928 and one of them was fitted with floats.

A two-seat **Klemm L 26 Va** (95 hp Argus As 8), c/n 231, was sent by Carlowitz & Co for demonstrations by the Exportgemeinschaft der Deutschen Luftfahrtindustrie and arrived in Shanghai in February 1931. Sun Tung-kang of Shantung acquired a two-seat Klemm L 26 II (88 hp Sh 13a) (ex D-2192), which he flew from Germany to China in June 1933. It was named "Chiu Kuo" (National Salvation) and reached Tsinan on 2 August 1933.

Letov

Letov was represented in China by Vaclav Havlicek. An example of the **Letov S-131** (525 hp BMW Hornet) single-seat fighter biplane was not imported by him, however, but by a Frenchman named Laurent or Lorant. It was sent to Mukden with pilot Kovanda for demonstrations in June 1930, but was probably later returned to Czechoslovakia.

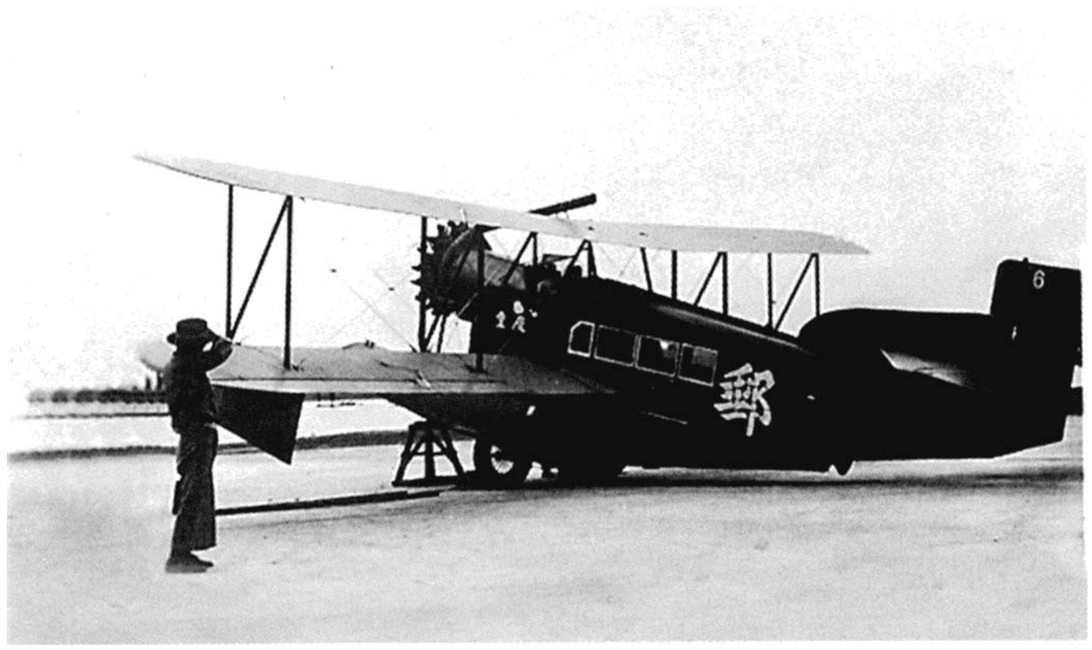
Lockheed

It was reported in June 1931 that the Canton Government had purchased via E G Meeker & Co eight **Lockheed Vega** single-engine passenger transport monoplanes for immediate delivery via Hong Kong. They were to be converted into military aircraft, but the deal was stopped when the Nanking Government protested.

Harvey Greenlaw, representative of North American Aviation arrived in Rangoon in June 1940 to arrange for the assembly of a number of American aircraft, including "several North American and Lockheed demonstration aircraft". A **Lockheed 12A** (450 hp P&W Wasp Junior SB) twin-engine passenger transport monoplane was registered in Burma as XY-AAM (probably c/n 1201, ex NC16052) and used by the Inter-Continent Corporation at the CAMCO factory. Two **Lockheed 18-40 Lodestars**, c/ns 18-2084 and 2085, were earmarked for CNAC in 1940, but were never delivered to China.

Loening (Keystone)

Andersen, Meyer & Co, Ltd, represented Keystone and Loening in China. Nine **Loening Air Yacht** eight-place passenger transport amphibians were acquired by CNAC. The first five were C-2-Hs (525 hp P&W Hornet) c/ns 238-



Loening Air Yacht CNAC No 6 "Chungking".

242, which were delivered to the Curtiss Airplane Export Corporation on behalf of CNAC. They were shipped from the factory on 23 and 30 August, 4 September and 5 October (two aircraft) 1929. The first two were tested in Shanghai on 13-14 October.

A sixth machine, C-2-H, c/n 220 (NC9773), was delivered to CNAC in September 1930. Another pair of Loenings (525 hp Wright Cyclone) was acquired by CNAC in the summer of 1931 and a final example in March 1933. These aircraft included a C-4C (converted into **Keystone K-85**), ex NC10588 (c/n 299, 525 hp Wright Cyclone). The last three Loenings in CNAC service were sold as scrap in May 1941.

C/n	Received	Fleet No	Name
238	9.29	1	Shasi
239	10.29	2	Anking
240	10.29	3	Hankow
241	10.29	4	Kiukiang
242	11.29	5	Wuchang
220	9.30	6	Chungking
?	8.31	14	Ichang
?	8.31	15	Wanhsien
(299)	3.33	16	Chengtu

Three second-hand Air Yachts, C-W c/n 203, C-2HC c/n 211 and C-2C c/n 223 (525 hp Wright Cyclone, ex NC5999, NC7770 and NC9784, respectively) were purchased by the Canton Government from American Airways in 1933. They were originally intended for the SWAC company but were instead used by the air force and were converted to carry bombs.

Lohner

Two Swiss-owned **Lohner R** (250 hp Austro-Daimler) four-passenger flying-boats registered CH61 and CH64 were sold to Manchuria. The Swiss registrations were cancelled on 29 September 1923 and the flying-boats arrived at Newchwang in July 1924.

Martin

In November 1934 the Martin B-10 and B-12 twin-engined bomber monoplanes were released for export to China. The CAF ordered nine examples of the **Martin M-139WC-1** and **WC-2** (750 hp R-1820-F3S Cyclone) export models (c/ns 677-682 and 689-691). The first three of a batch of six arrived in February 1936 and the last of these was handed over to the CAF on 17 May. The remaining three arrived in June. The last batch of three were shipped on the "Tai Yin" in August, the export licence being dated 30 July 1937 and amended on 19 August. These aircraft were first landed in Manila and arrived in Hong Kong only in December. The Martin bombers were assigned to 30th Squadron, 8th Air Group, and were also used by the 14th (Volunteer) Squadron.

(For **Martin TT** see under Sakamoto.)

Messerschmitt

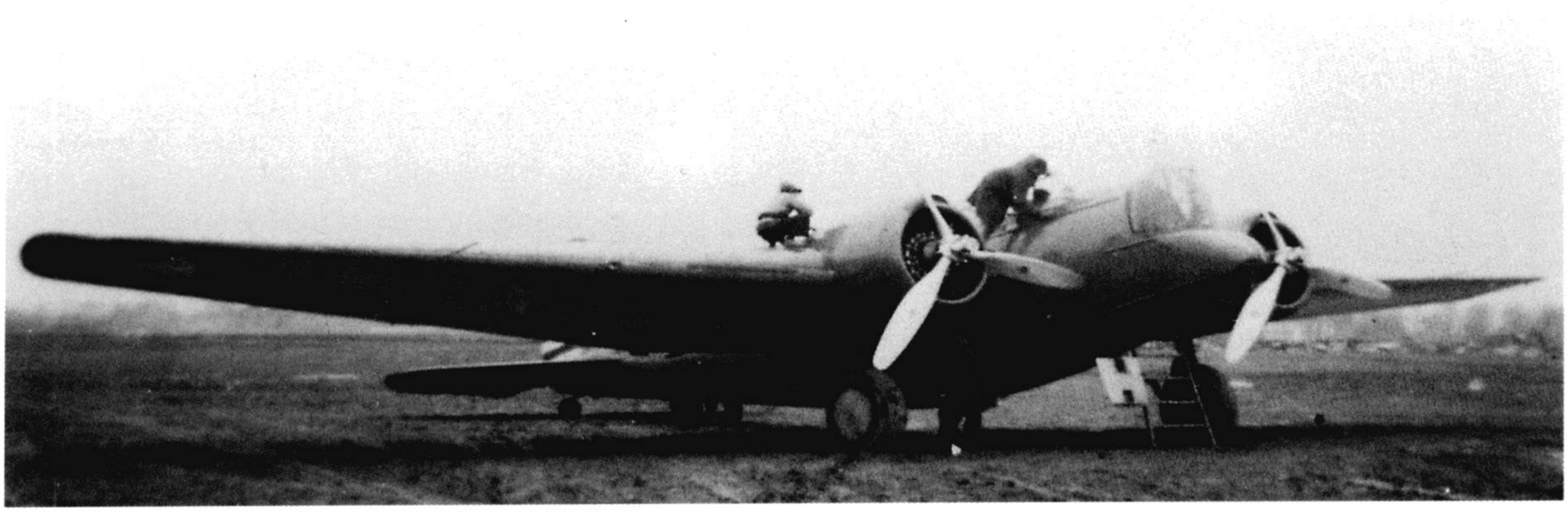
Six **Messerschmitt Bf 108D Taifun** (240 hp Argus As 10C) single-engine cabin monoplanes were delivered to MKKK in Manchukuo in 1937 and another 13 arrived in 1938.

Miles

In the spring of 1935 the FEACo offered a **Miles M.3A Falcon Major** (130 hp DH Gipsy Major) single-engine three-seat cabin monoplane to SWAC. It arrived in Hong Kong in May 1935 and was registered to FEACo as VR-HCV (c/n 149) on 27 May. It was never sold in China and was cancelled from the register on 30 May 1939 after having been sold to Malaya instead and registered VR-RAP in 1938.

Mitsubishi

Two **Mitsubishi Army Type 92** (420 hp Mitsubishi Jaguar) two-seat single-engine reconnaissance-bombers were delivered to the Kwangsi Air Force in August 1934 and at



The Martin M-139WC bomber.

least four more arrived in 1935. One source maintains that the total was four and that the aircraft had originally been part of an order placed by the Fukien Government during the rebellion in November 1933. The Mitsubishi Type 92s were used by the 3rd Squadron and later by the 34th Squadron of the CAF.

At least two **A5M Navy Type 96 Carrier Fighters** (610-640 hp Nakajima Kotobuki) were captured more or less intact in 1938 and one of them was tested by the CAF. Two, including one captured on 18 February 1938, were sent to the Soviet Union for evaluation.

Morane-Saulnier

A number of **Morane-Saulnier AR 35 EP2** (80 hp Gnome) two-seat parasol wing trainers were sold to China, but it is not clear if all "Morane-Saulniers" were of this model. A consignment of French aircraft for Chekiang arrived in Shanghai on board Chinese warship "Chao Wu" on 21 November 1923. They had been shipped to French Indochina on the "Mehoil Chief Engineer", from there to Haimen on the "Hwa Kung" and then with the "Chao Wu" in order to avoid customs. Four (probably) Morane-Saulnier two-seat monoplanes with 120 hp Le Rhone engines were included, of which two were fitted out as "rouleurs" (taxi trainers).

Kiangsu captured two of these aircraft in 1925 and they were described as one single-seat monoplane and one two-seater. One, definitely an AR 35EP2, was captured by Canton in 1927 and then passed on to the Nanking Air Force. Manchuria was also reported to have a Morane Parasol in March 1927.

Five Morane-Saulnier parasol monoplane trainers (80 hp Le Rhone), probably AR 35 EP2s, were ordered by Shansi from a French firm in 1926. They were, for some reason, not delivered until in June or August 1929 and Shansi initially refused to take delivery, but was probably persuaded to accept the aircraft after price reductions. In May 1928 17 French aircraft, including one Morane Saulnier, were delivered to Canton. They had been ordered by Li Chi-shen through a German agent named Thesing.

The Fukien contract for six Nieuport 121C1s was cancelled and instead six **MS 225** (490 hp Gnome & Rhone 9 Kdrs Mistral) single-seat fighters were ordered via the Aero Trading Company in Hong Kong (Comte J de Sibour) in July 1933. The first three (c/ns 4060-4062) were shipped from Marseilles on 13 September and were accompanied by Morane chief pilot Storm. They arrived at Amoy in November 1933 without armament, but the other three were never delivered.

Twelve **MS 406C1** (860 hp Hispano-Suiza 12Y31) single-seat fighter monoplanes were ordered in July 1937 or early in 1938. These aircraft (c/ns 1074-1085) were expected to arrive at Hanoi late in May 1938 but the contract was shelved due to the Munich Crisis. Twelve replacement aircraft were shipped in August 1939, but were seized at Haiphong and issued to a French Air Force unit in October 1940. These MS 406s (probably c/ns 485, 489, 500-502, 505, 508, 510, 512, 519, 539 and 540) had been diverted from French orders and replacement aircraft were built under a new Chinese contract. A German military report mentions that 14 (sic) MS 406s "intended for export to China" were still at the factory by February 1941 and that they were made ready and delivered to the Luftwaffe instead.

Nakajima

The **Nakajima Army Type Ko 4** (300-320 hp Mitsubishi Hispano-Suiza) was a **Nieuport ND 29** single-seat fighter biplane licence-built in Japan. In June 1930 Manchuria took delivery at Tokorozawa in Japan of six aircraft of this type. They were intended for the Japanese Air Mission to Mukden. Three were shipped from Japan (to Korea) and were then flown into Mukden later in June. The remaining three arrived on 27 July 1930. Some of these were damaged and were paid for and kept by Manchuria when the mission left in January 1931. The mission returned in March 1931 with at least four Nieuports, which were purchased and taken over by Manchuria in July 1931.

Ten (possibly nine) second-hand Army Type Ko 4s were bought by Kwangsi in 1935 for use as trainers. They had allegedly first been ordered by the Fukien Government during the rebellion in November 1933, but were never delivered there. When the Liuchow school moved to Kunming in 1938 the seven remaining examples were discarded.

In September 1934 two **Army Type 91-1 Fighter** (450-520 hp Nakajima Jupiter VII) monoplanes ordered by the Kwangsi Air Force arrived at Wuchow. A Japanese pilot tested the aircraft before they were flown to Nanning and one crash-landed during a demonstration. A total of 16 Type 91 Fighter and other types of Japanese aircraft were purchased and were delivered to Wuchow in September 1935. Eight Japanese personnel arrived to assemble and test them and the first two flew to Liuchow early in December.

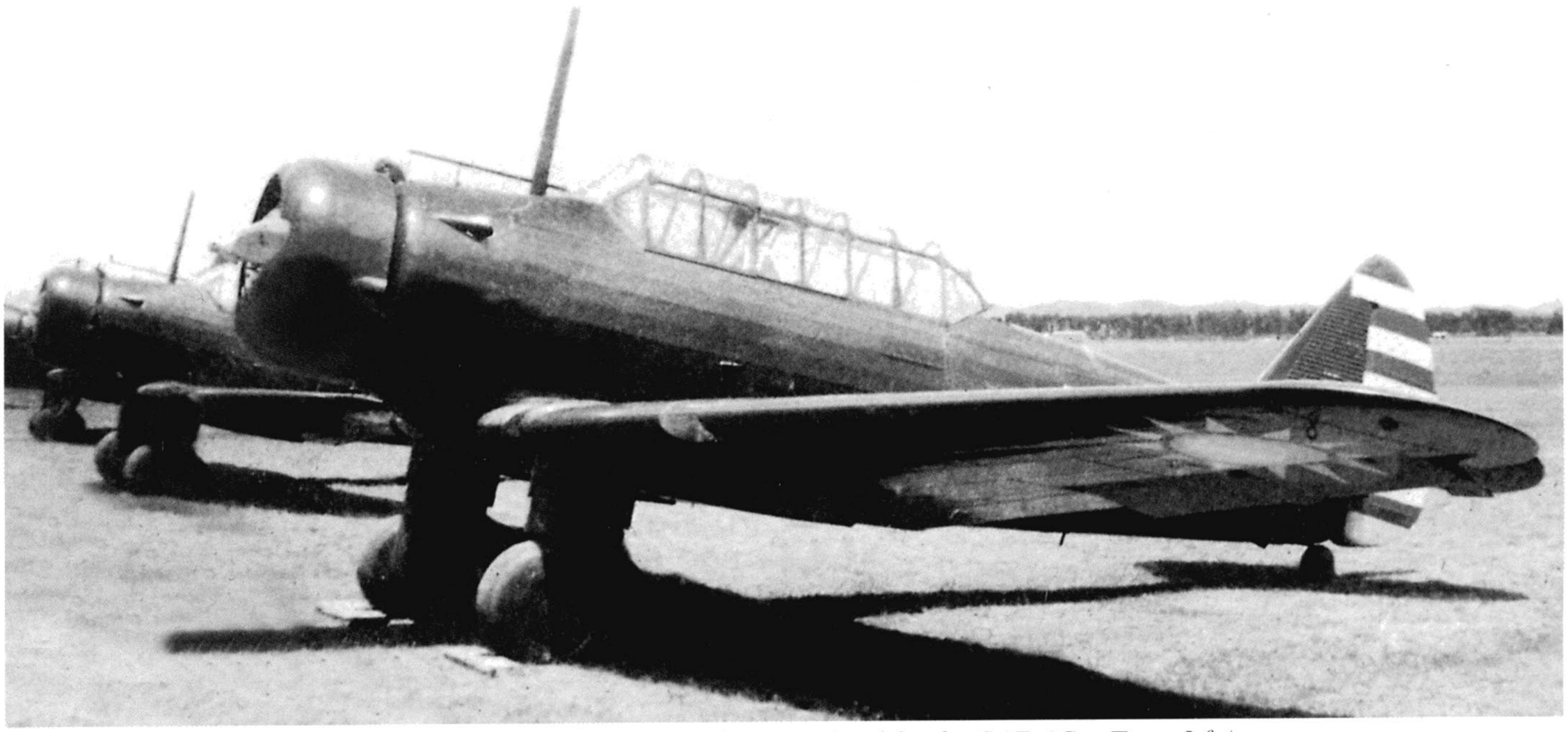
Initial reports mentioned 16 Type 91 fighters, but it seems that this total included also the Mitsubishi Type 92s delivered at the same time. One source maintains that these aircraft were originally part of the order placed by Fukien in November 1933. The Type 91 was first used by the 1st Squadron of the Kwangsi Air Force and later by the 32nd and 34th squadrons of the CAF.

The **AT-2 (Ki.34)** (710-780 hp Nakajima Kotobuki 41) twin-engined passenger transport was operated by the Hui-t'ung company, which received two in February-March 1937. Another example was captured from the Japanese and went into service with the CAF in 1942. The original Japanese engines were substituted by Wright Cyclones when it was transferred to CATC in June 1943 (Fleet number Chung-1).

The **LB-2** (700-840 hp Nakajima Hikari 2) twin-engined bomber was evaluated by the Japanese Navy but was not accepted. The prototype was then converted into a six-passenger transport and was sold to MKKK in Manchukuo in the spring of 1937.

Neman

Eight **Neman R-10** (650-730 hp M-25A or 750-775 hp



North American NA-16 trainer. One hundred (different versions) were ordered for the CAF. (Gen Tseng I-fu)

M-25V) two-seat reconnaissance monoplanes were delivered by the Soviet Union to the aviation school at Kuldsha in 1939. The formal order was dated 11 January 1940. Chinese designation: P-10 (From Cyrillic "P", which is Latin R).

Nieuport

A single-seat "**Nieuport fighter**" with 110 hp Le Rhone engine was built at Paoting in Chihli and was sent to Nanyüan to be test flown in 1923. After American pilot Northridge refused to do this a Japanese pilot flew it. It had been constructed by a Chinese aeronautical engineer who had trained for eight years in Japan.

On 31 March 1933 a contract was signed by General Gaston K Wang, Chief of Staff, on behalf of the Commander-in-Chief of the 19th Route Army at Changchow, Fukien, and the Société Générale Aéronautique, which called for the delivery of six **Nieuport 121** (650 hp Lorraine 12Hars Petrel) single-seat parasol-wing fighters. Delivery was to be made at Fort Bayard (Tai Ping). The contract was cancelled, however, and six Morane Saulnier MS 225s were ordered instead in July 1933.

For **Nieuport IVG**, see under Tsuzuki. For **Nieuport ND 29**, see under Nakajima.

Norman-Thompson

The Aircraft Disposal Company (Handley Page) contract with the Chinese Navy dated 9 December 1920, which was cancelled, included 50 **Norman-Thompson NT 2B** (200 hp Wolseley Viper) single-engine biplane flying-boats.

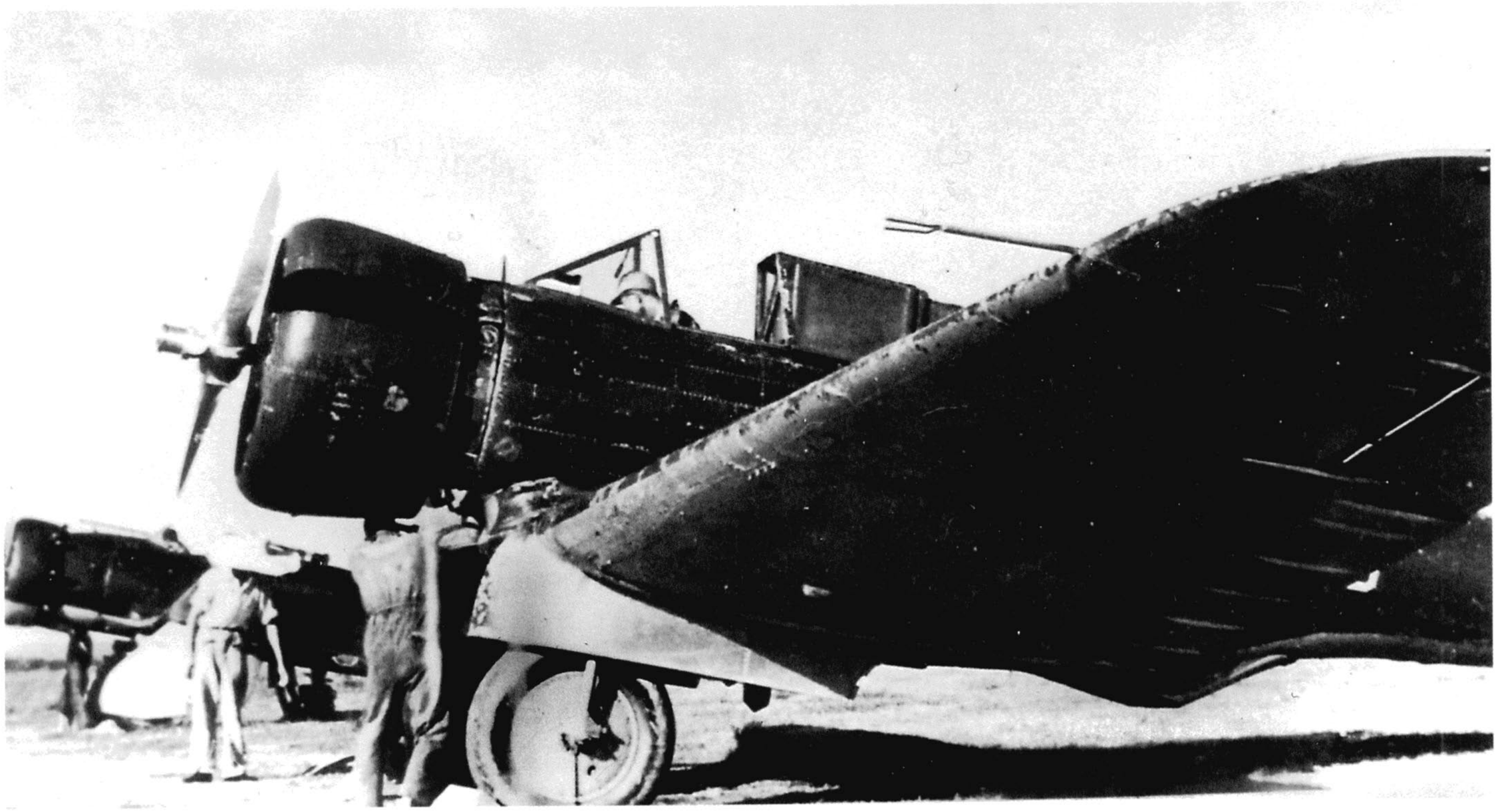
North American

Three variants of the **North American NA-16** two-seat trainer were ordered for the CAF. An NA-16-2 (NA-20) (500 hp Pratt & Whitney R-1340 Wasp), c/n NA-16-2 (NC16025), was demonstrated in Nanking during the early summer of 1937, but this machine was returned to the USA and sold to Honduras in 1938. On 23 February 1938, fifty NA-16s were ordered and these included 35 of the NA-16-4 (NA-41) (Wright Whirlwind), c/ns 41-697 to 41-731, and 15 of the NA-16-3C (NA-48), c/ns 48-732 to 48-746. Up to 18 June 1938, 29 of these had arrived in Hong Kong. The NA-16 entered service with the CAF schools in Kunming and at other places.

On 18 April 1939 a contract for fifty NA-16-4s (NA-56s) (Pratt & Whitney Wasp) was signed with the China Airmotive Company, New York, and the Consolidated Trading Company in Hong Kong. This batch (c/ns 56-1453 to 56-1502) was shipped to Rangoon, where the first 14 arrived on board the SS "Silver Maple" on 1 July 1940. About 25 had reached Rangoon by October. Harvey Greenlaw tried in June to arrange for the assembly in Burma, but this was refused by the British Government, however, and the Chinese Government finally had to pay a commission to CAMCO for the assembly of these aircraft at Loiwing. In January 1941 the assembly of the final 36 aircraft at Rangoon was authorised by the British authorities.

Northrop

The **Northrop 2E Gamma** (750 hp Wright R-1820-F53 Cyclone) single-engine two-seat light bomber monoplane was allegedly demonstrated by company pilot Carl Cover to the Chinese, probably in the USA. A total of 24, c/ns 14-27, 30-37 and 45-46 (two model 2E, seven 2EC and 15 2EDs) were purchased and delivered between 19 February and 21 September 1934. Components and subassemblies for another 25 Gamma 2Es (c/ns 48-72) were ordered in Septem-



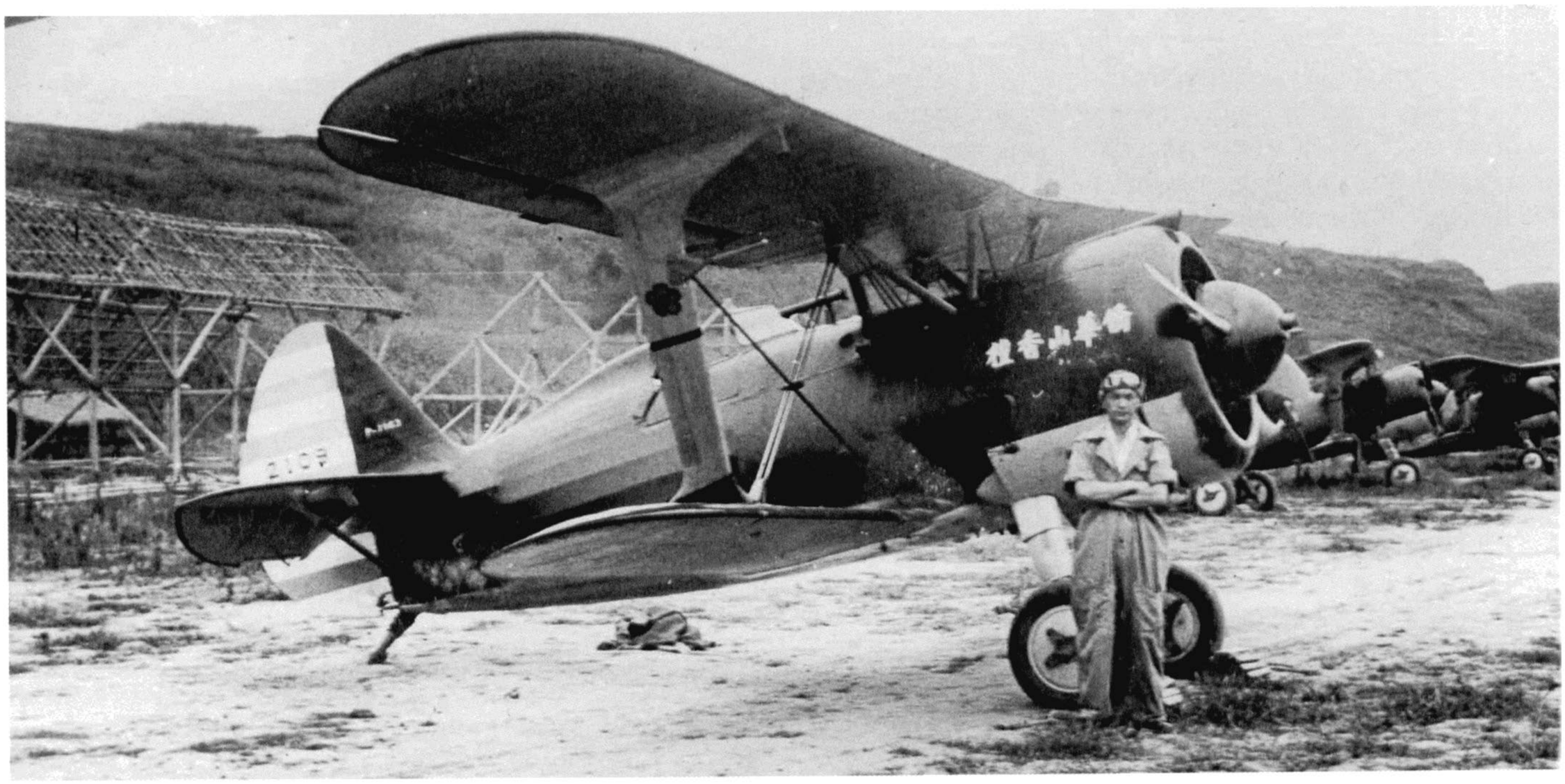
Northrop 2E Gamma with a Curtiss Shrike in the background.

ber 1934 and were shipped to China in 1935 for assembly in the CAMCO factory at Hangchow.

Two **Northrop 4A Alpha** (Pratt & Whitney Wasp C-1) single-seat mail transport monoplanes, c/ns 5 and 8 (ex NC933Y and NC961Y), were purchased on 22 July 1935 from TWA by Hong Kong aircraft broker James W Fisher. They were acquired on behalf of the Canon Government. A single **Northrop 5D Gamma** (550 hp Pratt & Whitney S3H-1), c/n 291, was received by MKKK in Manchukuo in 1936 for photographic reconnaissance. It had originally been acquired by the Japanese Navy for evaluation (designation BXN2) and it was serialled M-506 by MKKK.

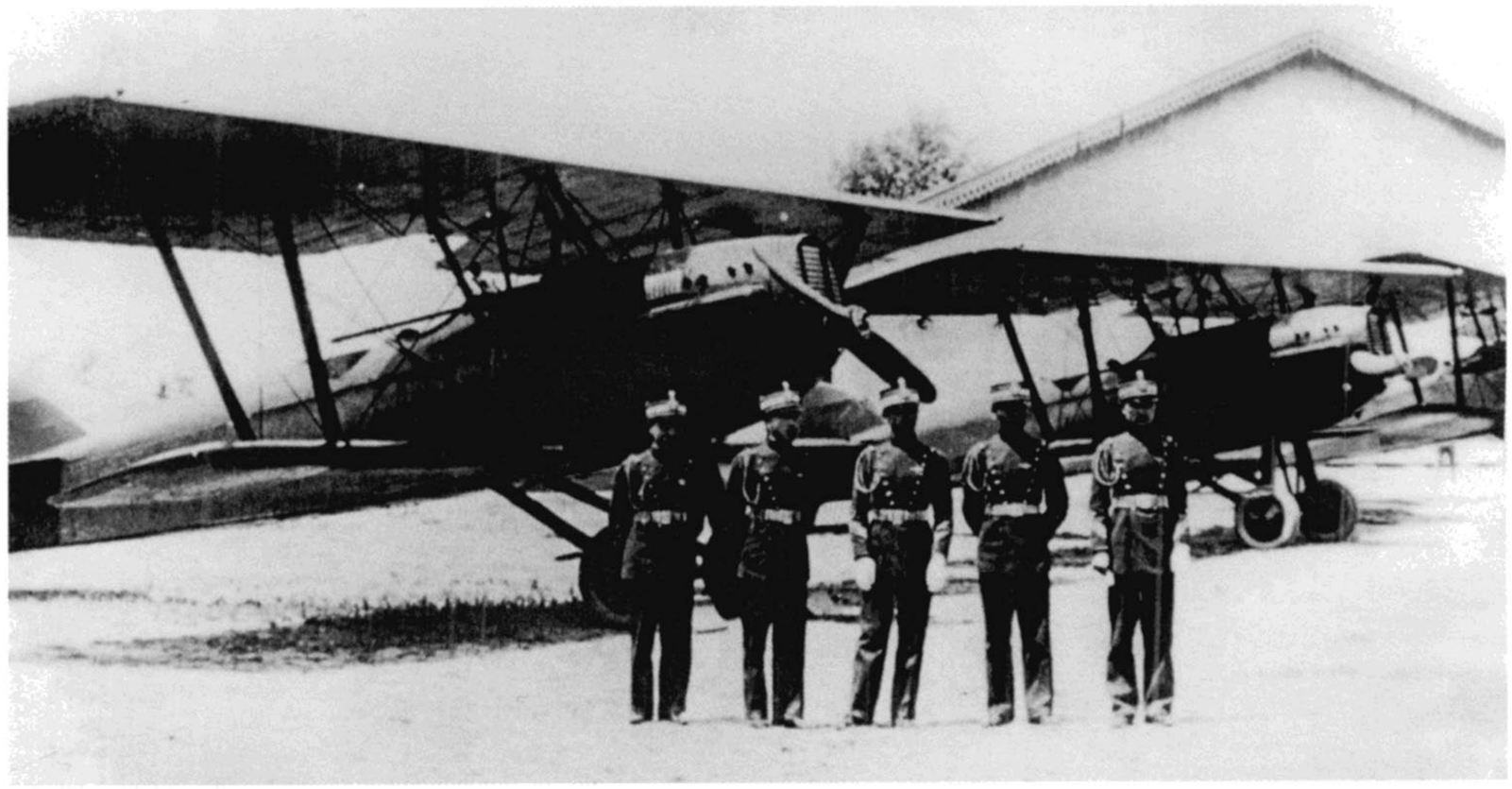
Pitcairn

Eight **Pitcairn PA-6 Mailwing** (220 hp Wright J-5) single-seat biplanes, c/ns 7, 8, 37, 40, 43, 59, 141 and 145 (ex NC7868, NC7965, NC212H, NC800H, NC803H, NC875M, NC377V and NC93W) were sold by American Airways to China in 1932 or 1933. According to one source they were ordered in April 1932 by rebelling General Chang



Polikarpov I-15bis s/n 2109.

Potez 25s of the Nanking Air Force.



Huei-ch'ang, who was trying to establish his own air force on Hainan Island. After arrival in Hong Kong in May 1932 they were seized by Canton and were converted into bombers. It seems that the sale was dated November-December 1933, however, and the conversion probably happened in 1934 instead.

Polikarpov

At least 18 **Polikarpov R-5** (500-680 hp M-17) two-seat reconnaissance and light bomber biplanes and **U-2** (100 hp M-11) two-seat biplane trainers were delivered to Sinkiang during 1933. One source states that this number included twelve of the R-5s.

The Soviet Union supplied a large number of **I-15bis** (750-775 hp M-25V) and **I-153** (800-1,000 hp M-62) single-seat biplane fighters to the CAF, the last-mentioned version with retractable undercarriage. A total of 289 of the I-15bis were delivered in 1938-41 and 76 I-153s arrived in 1941. In addition 197 **I-16** (700 hp M-25, 750 hp M-25V, 800 hp M-62) single-seat monoplane fighters were delivered in 1937-41 and eight of the **UTI-4** (730 hp M-25A) two-seat training version of the I-16 arrived in 1937. Six more followed of the trainer in 1940-41.

In 1939 the I-15bis design was modified by Constantine Zakhartchenko of the First Aircraft Factory at Kunming into the **Chung 28B** (745 hp Wright SR-1820-F53 Cyclone). Production of 100 was planned but proved impossible because of the war. It seems that thirty aircraft were completed between 1941 and 1943, however. Production of the I-16, or **Chung 28A** (745 hp Wright SR-1820-F53 Cyclone), was started at the Second Aircraft Factory and the first example was completed in July 1939. The majority of the aircraft built were two-seaters (**Chung 29A**) and all were fitted with Wright Cyclone engines. By May 1942, 12 had been produced, a further nine were being assembled and were to be ready in July and nine more were expected to be built by October 1942. Total production was probably 33.

Chinese Polikarpov fighter designations: E-15 (I-15bis), E-15-3 (I-153), E-16 (I-16), E-16-3 (later version I-16), Chung 28-A (I-16), Chung 28-B (I-15bis) and Chung 29-A (UTI-4). The numbers 28 and 29 correspond with the Chinese year.

Porterfield

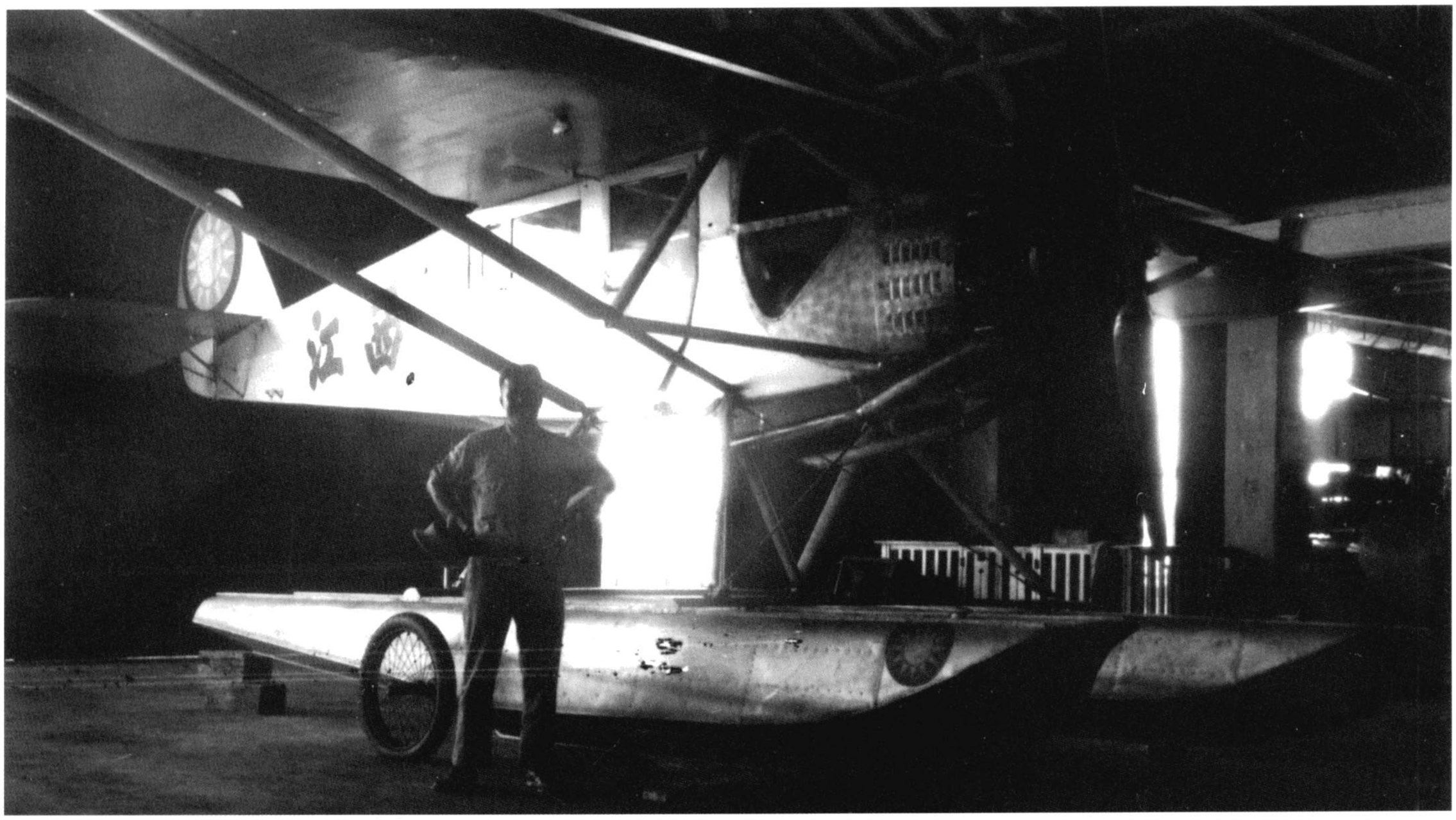
A L Patterson and Leslie A Lewis represented Porterfield aircraft in China and a single **Porterfield 35-70 Flyabout** (65 or 70 hp Le Blond) two-seat high-wing cabin monoplane (c/n 245) was imported in 1936 for their own private use. It was the last civil aircraft to leave Lunghua in 1937 and was damaged on landing at Shanghai Race Course on 13 August. It seems to have been repaired, however, and was registered to Archibald Lewis in Hong Kong as VR-HCY on 26 July 1938. It was cancelled on 22 October 1941 as sold.

Potez

Six **Potez VIII** (75 hp Anzani) small two-seat biplane trainers were ordered by Shantung and were delivered in the autumn of 1925. French pilot Francois de Boigne arrived as a representative of Potez to assemble the aircraft and he was also hired as a flying instructor. Five of these aircraft were taken over by the Manchurian Air Force in April 1928.

The Nanking Air Force purchased four **Potez 25** (500 hp Hispano HS 12Hb) two-seat reconnaissance and light bombing biplanes, which arrived in the summer of 1929. Manchuria ordered the Potez 25.34 A2B2 (450 hp Lorraine 12 Eb) and this order was placed through the intermediary of Chao (probably T H Chow), former engineer of l'Ecole Centrale, Paris, who called himself Geo in France. The first three were reloaded in Shanghai and arrived at Tientsin early in March 1928, and the first five of a batch of twenty reached Newchwang in September-October 1928. They were accompanied by company pilot Francois de Remmert and mechanic Paillez, who assembled and test flew them. In May 1930 two Potez 25.48 A2s (360-370 hp Rolls-Royce Eagle) arrived, which had been fitted with engines from old stocks at Mukden. One of the Manchurian Potez 25s was taken over by the Nanking Air Force in September 1931, but the rest were captured by Japan.

A single Potez 25 (450 hp Lorraine 12 Eb) was ordered by Szechwan and arrived in Shanghai early in 1931. It was then shipped to Chungking, where it arrived in May. The Société Francaise du Haut Yangtse sold five new Potez 25TOEs (450 hp Lorraine 12 Eb), two spare engines, two sets of floats, spare parts and six Hotchkiss machine guns to the same destination in 1931. Delivery was to be made from Hanoi by air. In September 1932 it was reported that two of these aircraft had arrived on 8 July, but they had not at that time been transported to the aerodrome. Early in 1935 the French Government in Indochina offered to sell four used Potez 25s to Yünnan, but the deal was probably not completed.



Ryan B-5 Brougham "Hsikiang" of the Canton Air Force.

The Potez 25.59 A2 (450 hp Lorraine 12Eb) model was apparently sent to China about 1929 and the Potez 25.40 A2B2 (500 hp Hispano HS 12Hb) was probably the version sold to Nanking.

The **Potez 32** (230 hp Salmson 9Ab) was a single-engine seven-seat passenger transport monoplane and the **Potez 33** was a military version of the same aircraft with a defensive machine gun. Two Potez 32 transports were delivered to the Nanking Air Force in the summer of 1929 and General Fong Youg (Young?) in Manchuria acquired a single Potez 32 five-seat "limousine", which was purchased through the Tientsin Central Garage and arrived in Mukden in November 1929

Four Potez 32s and 33s, two of them with interchangeable wheel and float undercarriages, were ordered by Szechwan from the French Government Disposals Department through Wu Shu-chi and Dr Ki Shu-ping. They were shipped in April 1929, reached Haiphong in August and were brought to Hanoi. It was intended to fly them to Chungking as soon as an aerodrome had been completed, but after one had crashed and been badly damaged on the delivery flight it was decided to ship them to Shanghai and from there up river to Chungking instead. Lewis machine guns were acquired separately. A single second-hand Potez 32 was delivered to Yünnan in October 1930.

Manchuria purchased five **Potez 36** (60 hp Salmson 5Ac) two-seat cabin monoplanes, which were delivered in May 1930, and four (95 hp Salmson 7Ac) were delivered to Yünnan in July 1933. A Potez 36 (70 hp Renault 5) "in very poor condition" that was in Shanghai by 1935 was proably the "French trainer" presented to the China Aero Club on 18 March 1934 and named "Yüeh Wen".

During his visit to France in July 1937 Dr H H Kung placed an order for four **Potez 631C3** (670 hp GR 14 M3/M4) twin-engined three-seat fighters (c/ns 5C-8C) and four **Potez 633B2** (670 hp GR 14 M3/M4) two-seat attack-bombers (c/ns 1C-4C). Two of the former were seized at Haiphong in September 1939 and issued to a French unit in Indochina and the four Potez 633s were seized in France. None of these aircraft reached China.

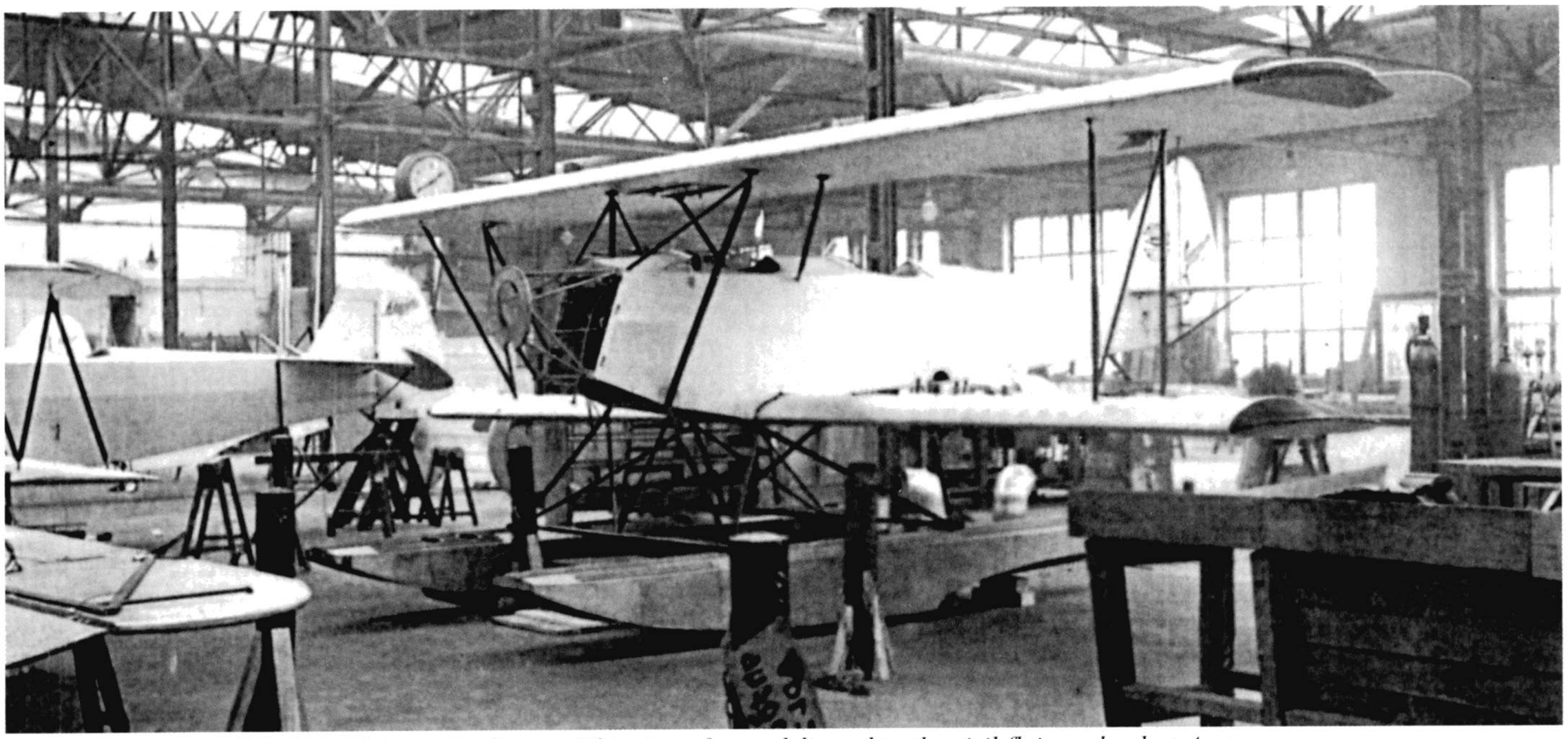
Royal Aircraft Factory (RAF)

Two **RAF SE 5A** (one with 180 hp Hispano Suiza, one with 210 hp Viper) single-seat fighter biplanes were shipped to China by the Pekin Syndicate, Ltd, one on the SS "Kitano Maru" on 18 October 1919 and the other on the SS "Somali" on 8 November. The export licence was dated 26 September. They arrived in Shanghai at the beginning of the year and were sent to Peking. They had originally been ordered by the Governor of Honan from Handley Page (Aircraft Disposal Company), but the contract was transferred to the Aeronautical Department of the Ministry of Communications in Peking. Manchuria later captured both aircraft.

Raab-Katzenstein (Raka)

A **Raka RK 2a Pelikan** (90 hp Siemens Sh 11) two-seat training biplane was acquired by the Fukien Commercial Aviation School at Amoy and arrived late in 1928. Another six of the RK 2c version (125 hp Siemens Sh 12) were purchased by the Nanking Air Force. They were shipped from Hamburg in February 1929 and arrived in April.

The Amoy school also purchased one each of the **Kl Ic Schwalbe** (120 hp Siemens Sh 12) and the **RK 9 Grasmücke** (35 hp Anzani), both two-seat biplanes, which arrived in



Raab-Katzenstein RK 9 Grasmücke at the factory. This aircraft was delivered to the civil flying school at Amoy.

the spring of 1929. Floats were acquired with the Grasmücke and the Schwalbe received no 6 in the school's own serialling sequence. In June 1929 Raab-Katzenstein had been asked to make an offer for 15 Schwalbes to the Canton Government, but no order followed. One or two of the Amoy school aircraft were taken over by the Canton Air Force when the school closed down in 1930. Designer Raab went to Shanghai to discuss factory plans in the summer of 1929 and at the beginning of August the "Leverkusen" offloaded two Raab-Katzenstein aircraft destined for Mukden in Shanghai. One source mentions that a Pelikan was fitted with bomb racks and demonstrated by a German pilot. In any way it is not known what became of these two aircraft, which apparently did not turn up at Mukden.

Ryan

Several **Ryan B-1 Brougham** (220hp Wright J-5) five-place high-wing cabin monoplanes were sold to China. The type became famous after Charles Lindberg's trans-Atlantic flight of 1927. Ryan was represented in China by the L E Gale Company and pilot Earl F Baskey was attached to the company to assist selling Ryans. The Canton Government purchased two in 1928. The first, c/n 139 (ex-NC6654), arrived on 9 October and the second, c/n 143 (ex-NC6958), which was fitted with floats, on 20 November.

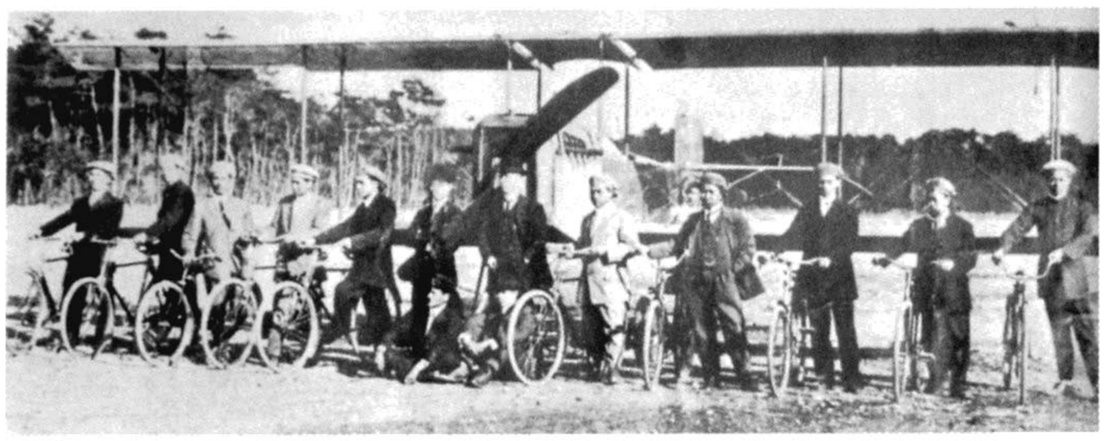
The Wuhan Commercial Aviation Company placed an order for three B-1 Brougham landplanes and two floatplanes in November 1928. They arrived in Hankow at the end of January 1929 and were erected and tested by Baskey in February. These aircraft, c/ns 168-172 (ex US Reg 7720-7724) were taken over by the Nanking Air Force.

One of two Broughams ordered by Yünnan arrived in Hong Kong in April 1929 and was delivered by Baskey. It was named "Kunming" and flew to Yünnan on 27 April. It was probably B-1 c/n 178 (ex US Reg 7730), which was sold on 11 February 1929. The second aircraft, a floatplane of the improved six-place **B-5** model (300 hp Wright J-6), was named "Ching-ma" (Golden Steed) and was delivered in the autumn of 1929.

Two Ryan B-5s, c/ns 233 and 236 (ex-NC733M and NC736M), were shipped to L E Gale, Canton, on 26 February 1930, and these were followed by c/ns 243 and 244 (ex-NC543N and NC544N) in April 1931. These four were probably among the five Ryan B-5s that were delivered to Canton in 1931. In 1932 the Hunan Aviation Bureau at Changsha acquired two B-5s from L E Gale. One was fitted out as a seaplane and the other, fitted out as a landplane, was still on order by October. The "luxurious" Ryan that was reported to be in Hong Kong in mid-June 1932 was probably one of these. One was c/n 246 (ex NC246Y), which was purchased second-hand from Peter R Beasley, Detroit.

Three of the Ryan B-5s, of which one was among three taken over from the Canton Air Force in 1936, were assigned to Aero Survey for photographic work, two of them being numbered "Tse Liang 3" and "Tse Liang 6".

Fifty **Ryan STM** (150 hp Menasco C-4S) two-seat low-wing trainers were ordered from the China Airmotive Company and the Consolidated Trading Company on 15 November 1939. The aircraft were called STC-4 (two-seat trainer) and STC-P4 (single-seat pursuit trainer) in the contract, but these designations were changed into STM-2E and STM-2P, respectively. There were two STM-2Ps (c/ns 375 and 376, US Reg.s 20R, 21R) and the rest were STM-2Es (c/ns 356-374, 376-405, US Reg.s 1R to 19R, 22R to 50R). The contract included manufacturing rights for CAMCO. The first aircraft were shipped in February 1940, initially to Manila. All were finally dispached to Rangoon, but when assembly at Lashio was refused by the Burmese Government it was decided to assemble them in the CAMCO factory at Loiwing. The first 20 arrived at Rangoon on 1 July 1940 on board the SS "Silver Maple". Several Ryans were destroyed when the Japanese bombed Loiwing in October 1940 and



Sakamoto No 6.

in January 1941 the assembly of the final 30 at Rangoon was authorised.

Sakamoto

In September 1916 Juichi Sakamoto took an aircraft called the **Sakamoto No 6**, a two-seat biplane (80 hp Curtiss OX), which had been built in Japan by the Nippon Hikoki Seisakusho, to Shantung. It was probably a copy of the Martin TT. Assisted by Ryokan Tachibana, Sakamoto began to train pilots for the Chinese Revolutionary Army. Sakamoto sold the aircraft and returned to Japan in the spring of 1918.

Saunders Roe

Saunders Roe was represented in China by the FEACo. A **Saunders Roe A.17 Cutty Sark** (130-140 hp Genet Major I) twin-engine four-seat amphibian monoplane was ordered in 1932 for the Kwangsi Air Force. Two were shipped in April and one, c/n 7, was registered in Hong Kong as VR-HAY on 2 June 1932 (cancelled 25.1.35 as sold). It was used to bring an injured Chinese pilot from Nanning to Hong Kong for medical treatment in June and on 15 November it was flown to Nanning by A V Harvey and handed over to the Kwangsi Air Force. The other aircraft, c/n 8, was obviously not sold and was stored at Kai Tak. In 1937 it was returned to the United Kingdom, registered as G-AETI and sold to Air Service Training.

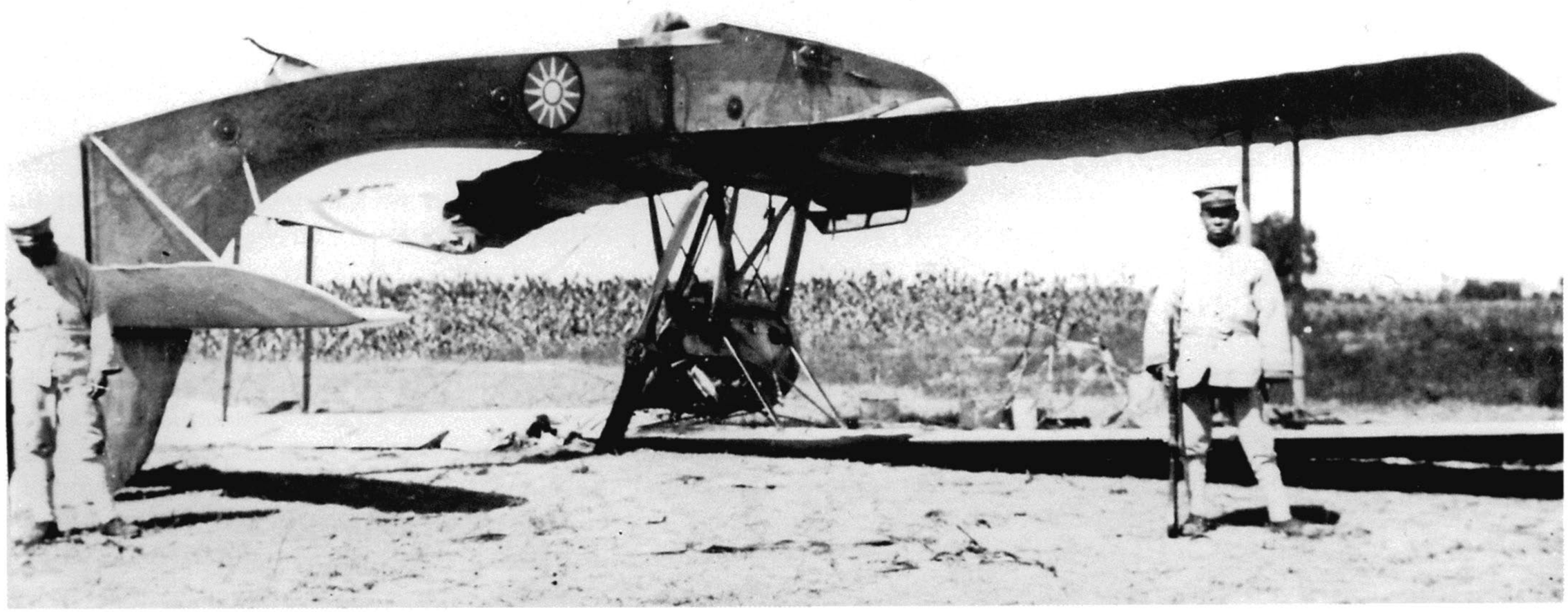
Savoia (SIAI)

Savoia was represented in China by C E Guest and K G Wahamski of the Swiss May-Kee (China) Company in Shanghai. On 6 July 1935 a **Savoia S 72** (550 hp Alfa Romeo and Bristol Pegasus Srs 2) three-engined bomber-transport monoplane took off from Rome to fly to China. The aircraft was registered I-ABMO (ex MM219) and was piloted by Silvio Scaroni, new head of the Italian Air Mission to China, and Angelo Tondi. They arrived in Hong Kong on 28 July, continued to Shanghai on 4 August and then flew to Nanchang. The aircraft was presented to Chiang Kai Shek. Six S 72s fitted out as bombers had been ordered late in 1934 or early in 1935 and these were delivered early in 1936. They were assigned to the 10th Squadron (CAF s/ns 1001-1006).

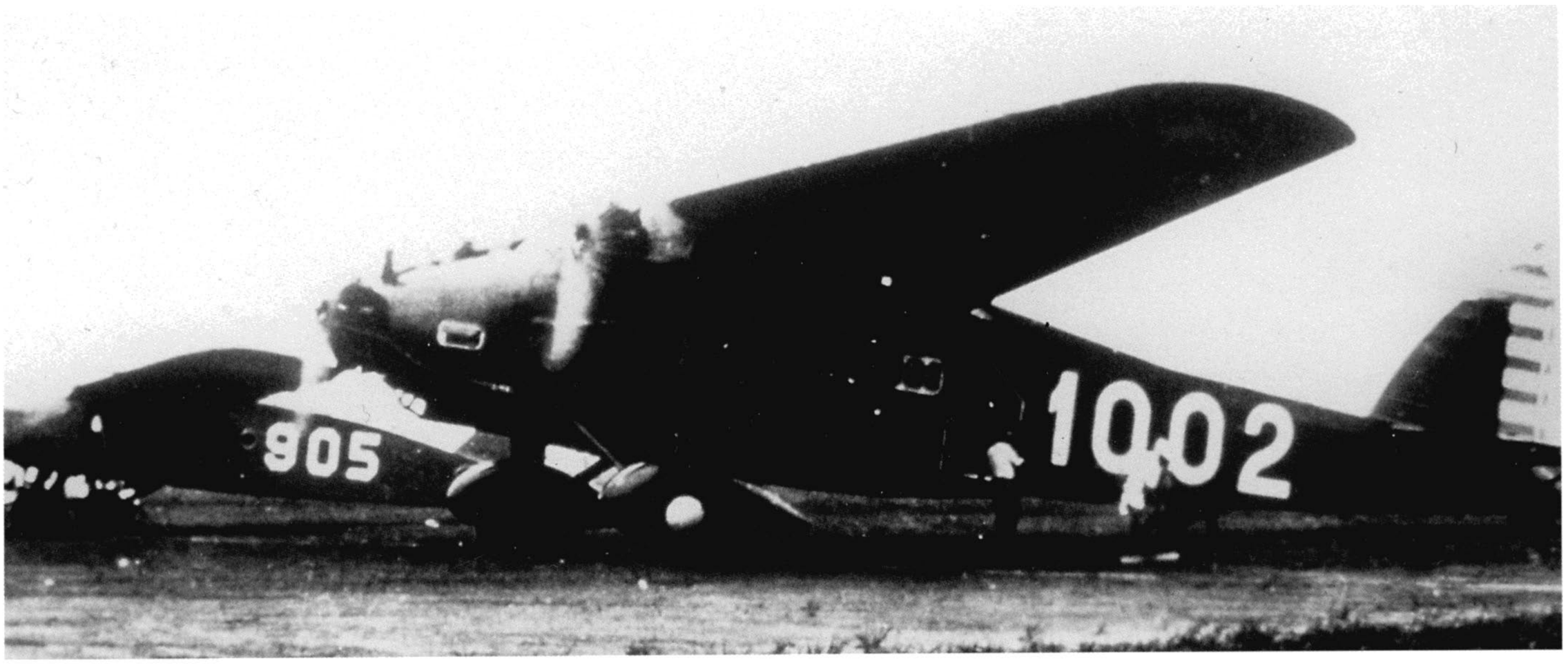
The twin-engine **S 81B** (840 hp Isotta-Fraschini Asso XI RC) bomber was selected for production at the SINAW factory in Nanchang. Six were ordered early in December 1936 and one example (MM326) was imported from Italy. This machine arrived in Hong Kong in nine cases in October 1937, but the cases were too large to be shipped into China by rail and a permission to assemble the bomber in Hong Kong was refused. Six of the cases would finally be sent to Canton by rail in June 1938. Meanwhile two of the S 81s built at Nanchang had been completed and were issued to the 13th Squadron. One more was finished but was destroyed with the others when the Japanese bombed the factory in December 1937.

Schreck

The large orders for French aircraft placed with Boixo Frères by Chang Tso-lin in Manchuria in 1924 probably included 20 Schreck FBA two-seat amphibians. Two models were obtained, the **FBA 17 HMT2** (180 hp Hispano Suiza 8 Ab) primarily intended for training, and the **FBA 19 HMB2** (350 hp Hispano Suiza) fitted out for reconnaissance and bombing. Company pilot Jean-Fernand Laporte was sent



Schreck FBA 17 HMT2.



Caproni Ca 111 905 and Savoia S 72 1002.

out in August 1924 to deliver a batch of six FBA 17 amphibians and one FBA 17 flying boat, probably part of the first order for 20 aircraft. Seven FBA 19 HMB2s were sold in December 1924.

Several ships arrived in China with FBAs during the winter of 1924-25, including the "Ruth Kayser", which passed Shanghai in October 1924 with two boxes of FBA aircraft consigned to Boixo Frères, Newchwang. The SS "Claus Rickmers" left Hamburg on 18 October with an FBA, which had come from Antwerp, destined for Boixo Frères at Hankow. It was reported on 26 June 1925 that 31 Schreck FBA 17s and FBA 19s had arrived or were arriving in Manchuria. British intelligence reported the total number of FBAs to be 38, while an American report dated 23 April 1925 stated that 36 had been ordered. Four additional Schreck FBA 17s, probably of the four-seat HT4 model, were reportedly purchased from the Compagnie Aérienne Francaise d'Extrême-Orient in Saigon at an auction in 1929.

A number of the Manchurian aircraft were used by the Chinese Navy at Tsingtao. By September 1934 they had four FBA 17s and four FBA 19s. According to a report dated April 1937 the Navy had 15 FBA 17s and FBA 19s, including three that had been built (copied) by the Navy at Tsingato. Some were fitted with 230 hp Salmson engines and some had apparently been acquired from France via Compagnie Jean Noir.

Kiangsu had at least three FBA 17 HMT2s by 1926 and these were captured by Canton in 1927 and then passed on to the Nanking Air Force. In 1926 Boixo Frères intended to send four FBAs to Shansi for demonstrations. One FBA 17 HMT2 amphibian was flown to Taiyüan and was later purchased for the Shansi Air Force.

The FBA 17 HMB2, a military variant of the HMT2, was developed for China in 1927, but none was ordered.

Seversky

About April 1939 A L Paterson of the China Airmotive Company, New York, and the Consolidated Trading Company, Hong Kong, secured a contract for 50 **Seversky EP-1** (P&W Twin Wasp) single-seat fighters and four two-seat **T-PC** observation aircraft with spares. The Chinese Mission in the USA had seen the P-35, which was the USAAF equivalent to the EP-1. The aircraft were to be shipped to Rangoon, but the contract, which had been signed by Dr H H Kung, was cancelled about August 1939 and Curtiss Hawk 75s were ordered instead.

Sikorsky

Sikorsky was represented in China by the United Aircraft Exports Corporation. Two examples of the **Sikorsky S-38B** (425 hp Pratt & Whitney Wasp) twin-engine passenger transport amphibian, c/ns 314-9 and 414-5 (ex N-5V and 307N), were purchased by the Nanking Government in 1931. An American export licence was granted on 8 July 1931 and delivery followed later in the summer. One of these S-38s was intended for use by Chiang Kai-shek as a VIP aircraft and was fitted with defensive armament. The other was wrecked in a crash at Shanghai on 9 January 1932.

An S-38BT (525 hp P&W Wasp T1D1), c/n 314-20 (ex NC 16V, export licence dated 26.5.33), was delivered from Pan American to CNAC via Pacific American Airways. It arrived on board the SS "Gertrude Maersk" in June 1933 and was assembled at Lunghua in July. It was soon followed into CNAC service by S-38BH c/n 414-8 (ex US Reg 17V) and S-38B c/n 514-4 (ex US Reg 40V) and these aircraft received CNAC fleet numbers 17-19.

CNAC acquired two examples of the larger **S-43W** (875 hp Wright SGR-1820F-2 Cyclone), c/n 4320 (NC16929) and c/n 4321 (NC16930), which were purchased on 18 December 1936. One arrived in Shanghai at the end of January 1937, but was requisitioned or purchased by the Government and placed at the disposal of Chiang Kai-shek. The second reached Shanghai at the end of February and was put in service on the Shanghai-Canton route as CNAC No 30 "Chekiang". When CAMCO at Loiwing was bom-

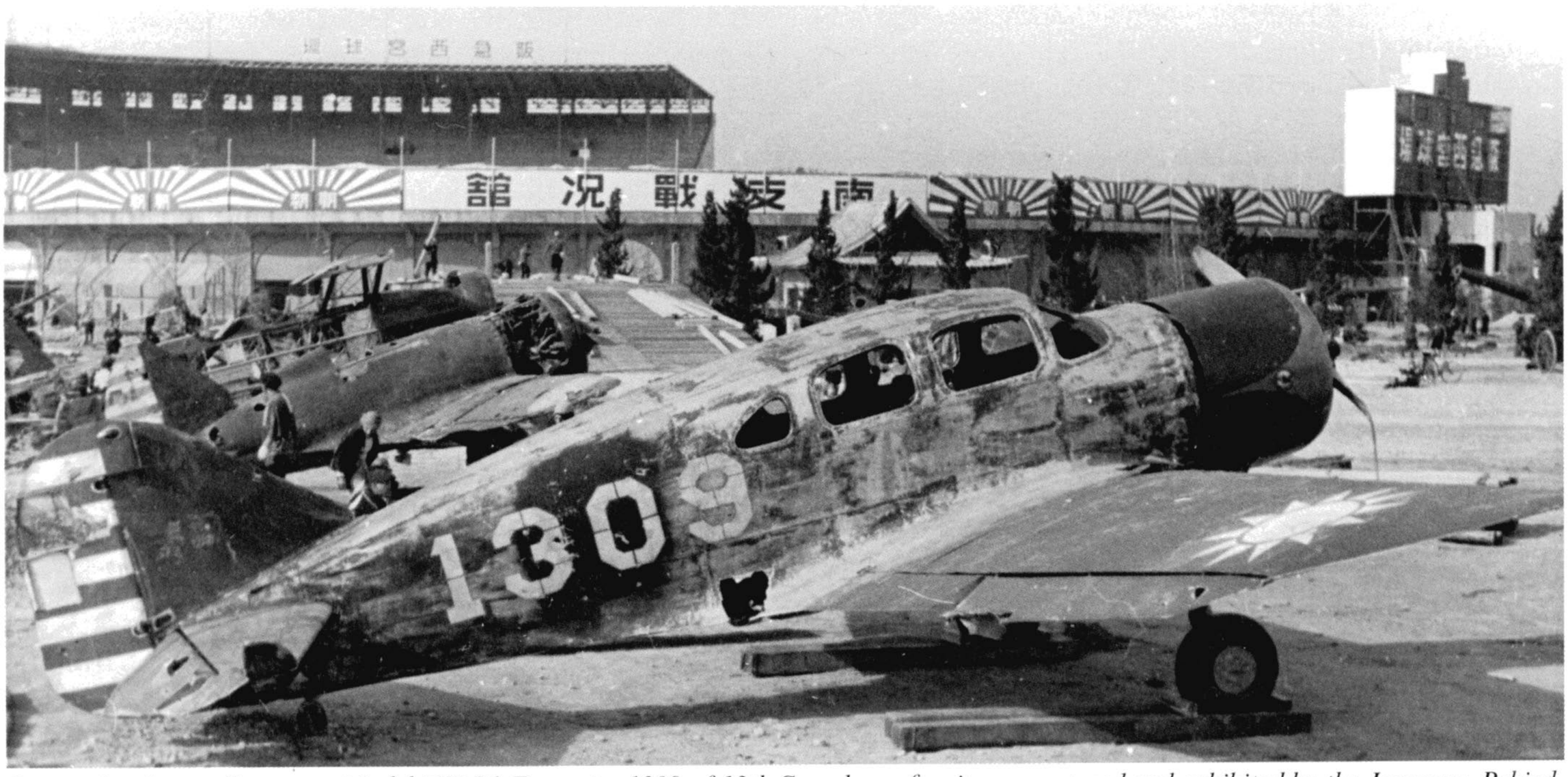
One of the Sikorsky S-38Bs acquired by the Nanking Government.

bed on 26 October 1940 a Sikorsky amphibian, which was "in final assembly", was damaged, but it was estimated that it could be rebuilt.

Spartan

The China Airmotive Company, Fed Inc, USA, with main office in Shanghai, was founded in 1931 by A L Patterson and L A Lewis for selling aeronautical material in China. One of the companies that this firm represented was Spartan and in 1935 a **Spartan C5-301P** (300 hp Pratt & Whitney Wasp Junior) five-place aircraft, c/n H-4, was sold to China. It was used by Aero Survey for photographic work and was numbered "Tse Liang 8". A very similar **Model C-4-301** (300 hp Pratt & Whitney Wasp Junior), c/n F-1, ex NC988N, was acquired by the CAF as well at an unknown date. One Spartan was transferred to CNAC with fleet No 33.

In 1937 a **Model 7W-P1 Executive** (400-450 hp P&W Wasp Junior SB) three-seat cabin monoplane fitted with camera, machine-guns and bomb racks was purchased for the CAF through China Airmotive. This aircraft, c/n 1, was



Battered and worn Spartan a Model 7W-P1 Executive 1309 of 13th Squadron after it was captured and exhibited by the Japanese. Behind are a Polikarpov I-16 and a Douglas O2MC.

Stinson SM-1F Detrioter operated by the Nanking Ministry of Communications.

shipped about 16 July 1937. Its CAF s/n was 1309 (13th Squadron) and it was lost in December 1937 and captured by the Japanese. Airmotive apparently purchased a second Executive from a private owner in Mexico for the CAF.

Stearman

Stearman was represented in China by the United Aircraft Exports Company. Three **Stearman LT-1** (535 hp Hornet A5) single-engine five-seat passenger transport biplanes, c/ns 2001-2003 (ex NC8829, NC8832 and NC8833), were sold by American Airways to the Canton Government in 1933. They were originally intended for the SWAC airline, but were instead converted into bombers and used by the air force. All three were taken over by the CAF in 1936 (incl s/ns 618 and 625).

CNAC obtained a **Stearman** in January 1935 (CNAC No 20 "Lunghwa"), but unfortunately the exact model is not known. It seems to have been a three-seater, but some sources describe it as a two-seat trainer with 200 hp (possibly Wright J-6-5) engine. It was probably a C-3R Business Speedster or possibly a Cloudboy. In 1940 it was donated to the Central University.

Stinson

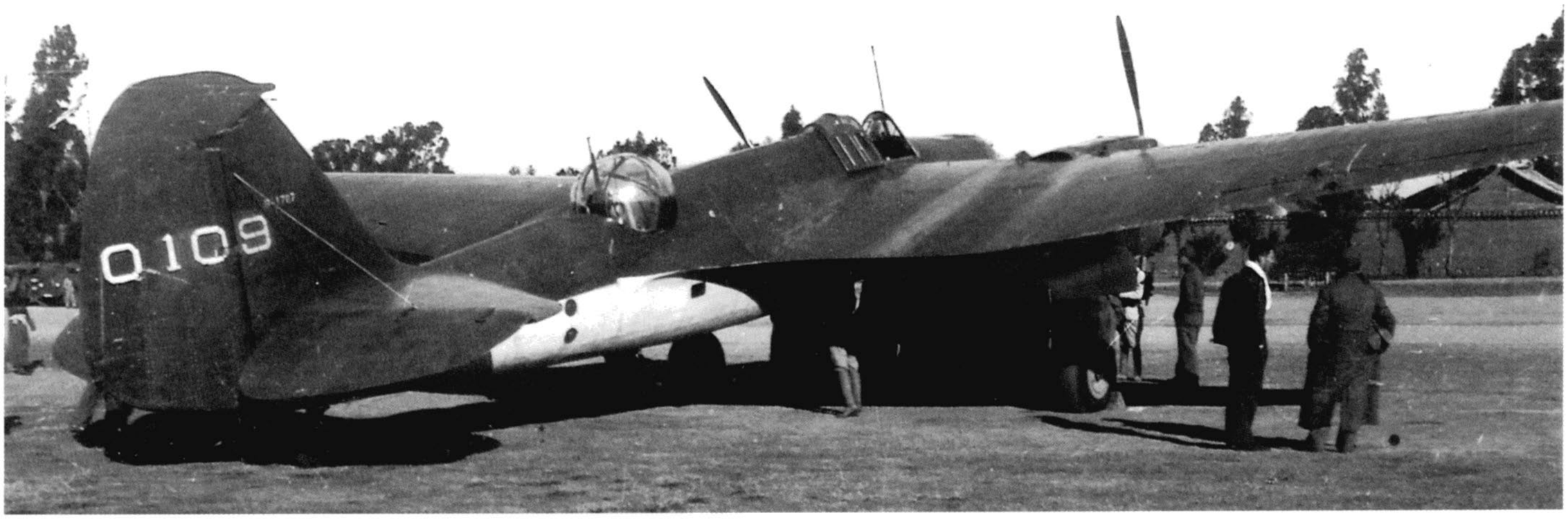
Four **Stinson SM-1F Detroiter** (300 hp Wright Whirlwind J-6-9) six-seat cabin monoplanes were ordered through the American consul in Nanking on 17 March 1929. They were intended for the Shanghai-Nanking mail route operated on behalf of the Ministry of Communications. C/ns M509-512 were shipped in April 1929 with Stinson pilots Henderson and Machle. After arrival in Shanghai on 22 May and assembly they were numbered "Hu Jung 1", etc, and marked with military insignia as they were property of the Nanking Government.

Another pair of Detroiters were ordered together with two four-seat **SM-2 Juniors** (225 hp Wright Whirlwind J-6) and on 7 October an American export licence was granted for these aircraft, a number of float undercarriages and spare parts. All were shipped on 2 November on board the SS "President Jefferson". The new aircraft arrived in Shanghai only in February 1930, however. The Detroiters were transferred to CNAC in the summer of 1930 (CNAC fleet numbers 7-12) and the Juniors went to the CAF (one was named "Kiukiang"). The last CNAC Detroiter was destroyed in a Japanese attack on 14 January 1941.

An American SM-1 Detroiter (C3694, c/n M217) was named "Spirit of Canton" and had a Chinese flag and symbol painted on in November 1928. Tien Lai-huang, Donald Starr and Jack Byrne used it for a good-will tour of the United States while preparing for a flight from the USA to China, but nothing more is known about this undertaking.

A number of **Stinson SR Reliant** four-seat cabin monoplanes were used by the Canton-based SWAC airline. Three of a similar model called the **Junior SR** (215 hp Lycoming R-680), c/ns 8780, 8782 and 8783, were exported to China in 1933. These were followed by a **SR-5D** Reliant (215 hp Lycoming R-680), c/n 9211A, and three **SR-5Cs** (260 hp Lycoming R-680-5), c/ns 9339A, 9344A and 9347A. The last three were sold via the Fish Air Company in Hong Kong. The five-seat **SR-9D** (285 hp Wright R-760-E1 Whirlwind) version found its way to China as well, when two were purchased by SWAC in 1937 (probably c/ns 5250 and 5251). SR-9D c/n 5220 (US Reg 17114) might also have been sold to China and SR-9B c/n 5155 (NC17174) was named "Spirit of New China". It was seen in the USA in 1939 with crossed Chinese and American flags painted on the fuselage.

A single **Model A Tri-Motor** (260 hp Lycoming R-680-5) 11-seat passenger transport, c/n 9105 (ex NC15105), was officially sold on 7 April 1937 to the "American Eastern Aviation Company" in Hong Kong. The export licence was dated 29 July 1937. SWAC had signed the contract for this aircraft on 13 March 1937 and it was to be delivered in 45 days. It arrived in Hong Kong in May 1937 aboard the "Pre-



Tupolev SB.

sident Grant" and was flown for the first time on 25 May by Stinson Company pilot Walter J Carr.

Three **Model O** (225 hp Lycoming R-680) two-seat training biplanes, c/ns 10006-10008, were acquired for the Kweichow Army Air Corps in 1934. They arrived in Hong Kong in May but eventually ended up in the Canton Air Force. A pair of three-seat **Stinson 105 Voyagers** (75 hp Continental A-75-3) were imported in 1940/41 for use by the Inter-Continent Corporation (CAMCO) and were registered in Burma as XY-AAH and XY-AAJ.

Takasou

In 1915 Japanese Takayuki Takasou built the **No 5 Aeroplane**, a modified Curtiss Pusher copy. In the following year he sold this aircraft, minus the 60 hp Hall Scott engine, "to a Chinese buyer".

Tsuzuku

Early in 1915 the Chinese Revolutionary Army placed an order with Tetsusaburo Tsuzuku in Japan for the **Tsuzuku No 3** (50 hp Gnome), a copy of the Nieuport IVG single-seat monoplane. It was completed in April 1915 and Yonezo Hoshino assisted Tsuzuku with the delivery to Shantung and also served as an instructor pilot.

Tupolev

The Soviet Union supplied six **Tupolev TB-3** (840-970 hp M-34RN) four-engined bombers to China. They arrived at Alma-Ata on 22 October 1937 and reached Lanchow on 21 October. A formal contract covering these aircraft was signed only on 3 March 1938.

A total of 288 **SB** (860 hp M-100A and 960 hp M-103) twin-engined bombers were supplied between 1937 and

Stinson Junior SR "Chiming" of SWAC at Canton.

Vickers Vimy G-EAUL was the last example of this type delivered to China.

1941. It should be noticed that the often used designation "SB-2" is incorrect. See below! Included in that number were at least three **USB** trainers. Chinese designations: "SB-2" (SB with M-100A engine, original Soviet designation SB-2M-100) and "SB-3" or "SB-III" (SB with M-103 engine, SB-2M-103).

Vickers

A large contract was signed between the Chinese Government and Vickers, Ltd, on 12 August 1919, which called for the delivery of 40 **Vickers Vimy Commercial** (360 hp Rolls-Royce Eagle VIII) twin-engined 10-passenger transport biplanes, 25 **Vickers VIM** (Vickers Instructional Machine, built from surplus FE 2d components and modified with the 360 hp Rolls-Royce Eagle VIII) two-seat pusher biplanes, 20 reconditioned Avro 504K trainers, and spares. Two pilots and eight mechanics were to be sent out to assemble and test fly the aircraft. On 1 October an agreement was signed with Vickers for a loan sufficient for the purchase of 100 Vimy Commercials and the contract was changed accordingly. Discussions over a plan to sell 100 Vimys to China in fact took place already in January 1919.

Further modification of the contract was soon proposed and on 13 June 1920 the final numbers were agreed: 40 Vimys, 60 Avros and 35 VIMs, plus 10 extra Gnome Monosaupape and 23 Rolls-Royce Eagle VIII engines. The Vimys were c/ns 1-40 and were completed between April 1920 and February 1921. The last two were registered G-EAUY and G-EAUL. The VIMs had c/ns X41-X75.

The first two Vimys were shipped on board the SS "Glensamda" on 17 June and up to 25 September 1920 ten had arrived in China. Another four were due at Tientsin on 18 October, and ten more in November-December. At the beginning of September the British Air Ministry had inspected 32 of the Vimys and nearly all of the VIMs. Deliveries were halted due to the civil war in China, however, and the remaining 16 Vimys and the 35 VIMs were handed over to Chinese representatives in Great Britain only in January-February 1921. The last Vimy was sent with the SS "Benarty" in August. Both Vimys and VIMs were later captured and taken to Paoting, Kalgan (KMC), Loyang and Mukden.

Initial Vimy Shipments

Date	Ship	Number of aircraft
17.6.20	SS Glensamda	2
30.6.20	SS Carnavonshire	2
2.7.20	SS Khiva	2
22.7.20	Des Messageries Maritimes	2
27.7.20	SS Knight of the Garter	4
4.9.20	SS Yalou	6
		Total: 18

A number of the Vimys were named: "Ch'eng Feng", "Ta P'eng", "Cheng Ku", "Shu Yen", Mo Yün", "Hsüan Hou" and "T'eng Hung".

On 10 March 1927 Vickers applied for a licence to export ten trainers with photographic equipment to Mukden. This was probably the **Vendance II** (300 hp ADC Nimbus) two-seat trainer biplane, which was fitted with photographic equipment. Probably due to the Arms Embargo this deal fell through. Vickers was later represented in China by the Jardine Engineering Corporation, who brought out an example of the **Vespa VI** (Bristol Jupiter VIIF) two-seat army co-operation and reconnaissance biplane to China as a demonstrator. This was c/n 1 (G-ABIL) which arrived in Shanghai in March 1931 with Vickers pilot H W Banting and a mechanic. It was erected there and flown to Nanking. A tour to Mukden had been planned but by mid-June the aircraft was still in Nanking. It was later returned to the United Kingdom.

Vought (Chance Vought)

Vought aircraft were sold by United Aircraft Exports, Inc, but in Hunan, Hupeh, Honan, Szechwan, Kansu, Shensi and Shansi L E Gale & Company represented Vought. The Nanking Government ordered 12 **Vought O2U-1D Corsair** (425 hp R-1340 Wasp) two-seat reconnaissance and light bombing biplanes from Earl F Baskey of L E Gale & Co in October 1929. They were shipped in November-December (export licence dated 9 November 1929), arrived in Shanghai in December 1929-January 1930 and were taken to Nanking for testing. This version of the Corsair was later called the "Old Corsair" in China.

On 5 May 1930 United Aircraft Exports received an export licence for another 20 Corsairs with bomb racks and ammunition. They had been sold through their representative Gordon B Enders. They arrived in Nanking

in September the same year and were distributed to the 4th and 6th squadrons.

In October 1930 L E Gale & Co sold two Corsairs to the Hunan Government. They arrived in the spring of 1931, but were donated to the Nanking Government after the Shanghai Incident. The total number delivered to Nanking was 32 (Or possibly 38).

It has proved difficult to determine exactly how many Corsairs of different versions there were in China. The **V-65C1** (600 hp P&W R-1690-C Hornet) and **V-92C** (635 hp P&W T2D-1 Hornet) were called the "New Corsair". A V-65-CD prototype was built in 1933 and sent for demonstrations and 14 V-65-C1s were then ordered from United Aircraft Exports and delivered later in 1933. They were assembled at Hangchow and the V-65-CD was acquired as well. The total number sold to China was apparently one V-65-CD and 32 V-65-C1s, of which four were to be fitted with floats. Most of them were shipped in 1934 and by mid-May 24 were still on their way. One of a consignment of six crashed at Hungjao on 12 July 1934 before delivery. UAE representative and pilot Carl Nahmmacher was killed, while mechanic Richard Welch bailed out and saved his life.

Several Nanking pilots defected to Canton with a number of Corsairs, but nine new V-65Cs were delivered directly tho the Canton Government and not to Nanking. By December 1933 the aircraft inventory of the Canton Air Force included 12 old Corsairs and the nine V-65Cs were on order. There were also four locally built Corsair copies. A report from October 1935 mentions 12 "New Corsairs", seven "Old Corsairs" and six of the locally made variant. Shansi captured a Nanking Corsair in 1930 and this machine was turned over to the Manchurian Air Force in March 1931.

Twenty V-92Cs with interchangeable wheel and float undercarriage were ordered on 7 April 1934. They were to be shipped from New York during May (3), June (9) and July (8). There is information that the V-90 demonstrator might have been sold to China as well. In any case 21 V-92Cs seem to have been delivered, one possibly as a compensation for the V-65C1 that crashed in Shanghai.

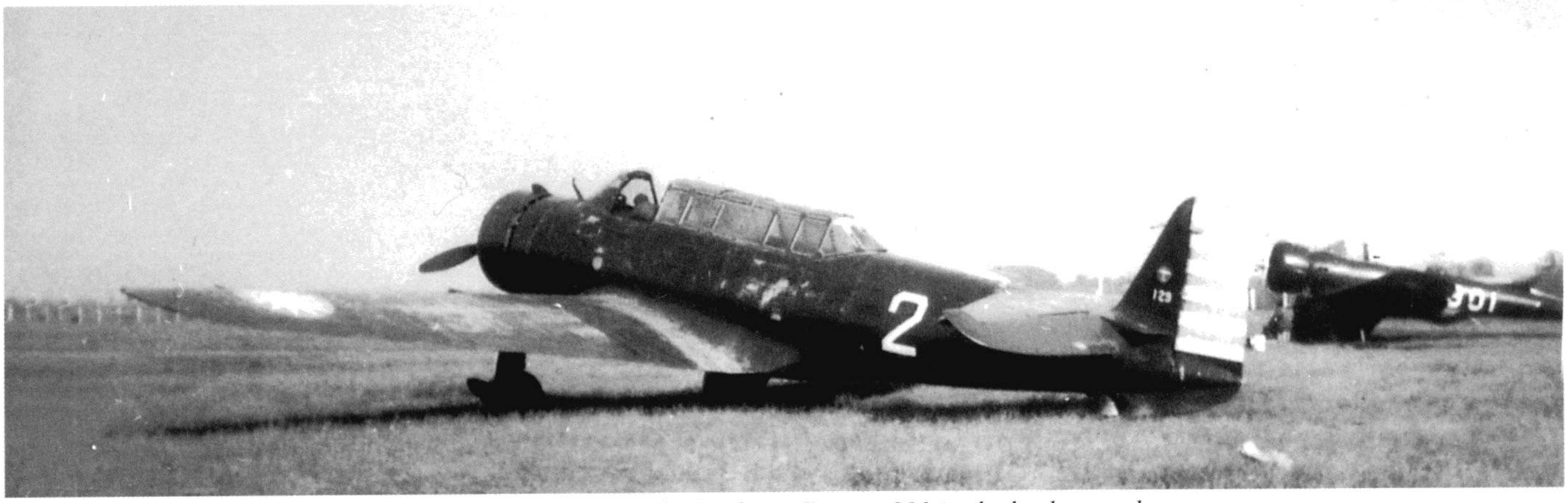
The China Airmotive Company and Consolidated Trading Company was reported in April 1939 to have received an order for 25 **V-156** (Pratt & Whitney R-1535-96 Twin Wasp Junior) two-seat scout and dive-bombers and spares. The contract was cancelled about August the same year, however.

Vultee

The Canton Government ordered 30 **Vultee V-11** (850 hp Wright GR-1820-G2 Cyclone) two-seat attack bombers on 2 and 10 February 1936, of which one was to be delivered completed as a pattern aircraft and the rest were to be assembled at the Shiukwan Aircraft Factory. The contract was later taken over by the Nanking Government. The first V-11-A (c/n 30) was completed in December 1936 (test-flown in China on 12 July 1937) and 29 V-11-Gs (c/ns 36-64) were shipped between July 1937 and April 1938 in the form of parts and sub-assemblies for assembly at CAMCO, first at Hangchow and later at Hankow. The V-11 was issued to the 9th, 10th, 14th and 32nd Squadrons.

On 25 March 1939, 26 **V-12-Cs** (1,100 hp Wright GR-1820-G205B Cyclone) were ordered with a set of assembly jigs for completion by CAMCO. The first (c/n 143, NX29367) was damaged in the USA in January 1941 and was not delivered. The other 25 were shipped as sets of parts. A pattern aircraft (c/n 144) of the **V-12-D** model (1,600 hp Wright GR-2600-A5B) was shipped in 1940 and another 50 of this version were ordered. It seems that 51 parts sets were shipped, but only a few were completed.

Vought V-92C Corsair.



Vultee V-11 s/n 2(129), probably of the 9th Squadron, with Northrop Gamma 901 in the background.

Three examples of the **V-1A** (735 hp Wright SR-1820-F2 Cyclone) single-engine passenger transport were acquired on 3 February 1940: c/n 9 (ex US Reg 13771), which was registered XY-AAF in Burma in 1940 for use by CAMCO, c/n 23 (ex NC16000) and c/n 26 (ex NC17326). The last two were used by CNAC from July 1940 (CNAC No.s 44 and 45). Two, probably the same machines, were taken over by CATC in June 1943 (CATC fleet no.s Chung-3 and Chung-4).

Waco

Waco was represented by the L E Gale & Company in China. Among the first aircraft sold was a **Waco 9** (90 hp Curtiss OX-5), a three-seat biplane, which was purchased by Szechwan in the summer of 1929. Another Waco 9, US Reg 3355 (c/n 595), was owned by Chinese student Wong Wing Due in Chicago.

In June 1929 five **Waco 220 Taper-Wings (Model ATO)** (220 hp Wright J-5 Whirlwind) three-seat biplanes arrived in Hong Kong. They were c/ns A-89 to A-93 and had been ordered by the Canton Air Force on 2 April. They were shipped from the USA in May and arrived in Canton on board the SS "Foo Shing". Earl F Baskey, L E Gale's Company pilot, assembled and test flew them.

Six **Waco CSO Straight Wing** (225 hp Wright J-6 Whirlwind) single-seat light military biplanes fitted with machine-guns and bomb racks were later ordered by Canton from L E Gale. They left the factory in December 1930, were shipped on the SS "President Pierce" (two) and SS "President Jackson" (four) and arrived in Hong Kong in January 1931.

A trio of Waco aircraft of different models, all three-seat biplanes, were sent out to L E Gale in 1930 for demonstrations: a **CSO** (225 hp Wright J-6 Whirlwind), c/n 3115, an **MNF** (125 hp Menasco Pirate C-4), c/n 3408 (ex US Reg 11213), and an **RNF** (110 hp Warner Scarab), c/n 3359. They probably arrived late in 1930, as one was demonstrated by company pilot Glenn W Brophy in December or early in 1931. The MNF was demonstrated by American pilot Williams at Mukden in the spring, but was not flown after May due to engine problems. It was seized by the Japanese, but L E Gale tried to have it sent to Shanghai after its engine had been repaired.

On 23 January 1931 Brophy left Shanghai in the RNF, now named "Feng Wang" (Phoenix), which had been fitted with an extra fuel tank in the front cockpit for an attempt to fly to the Philippines. He got lost, however, and instead landed in Canton only about 18 February. He apparently

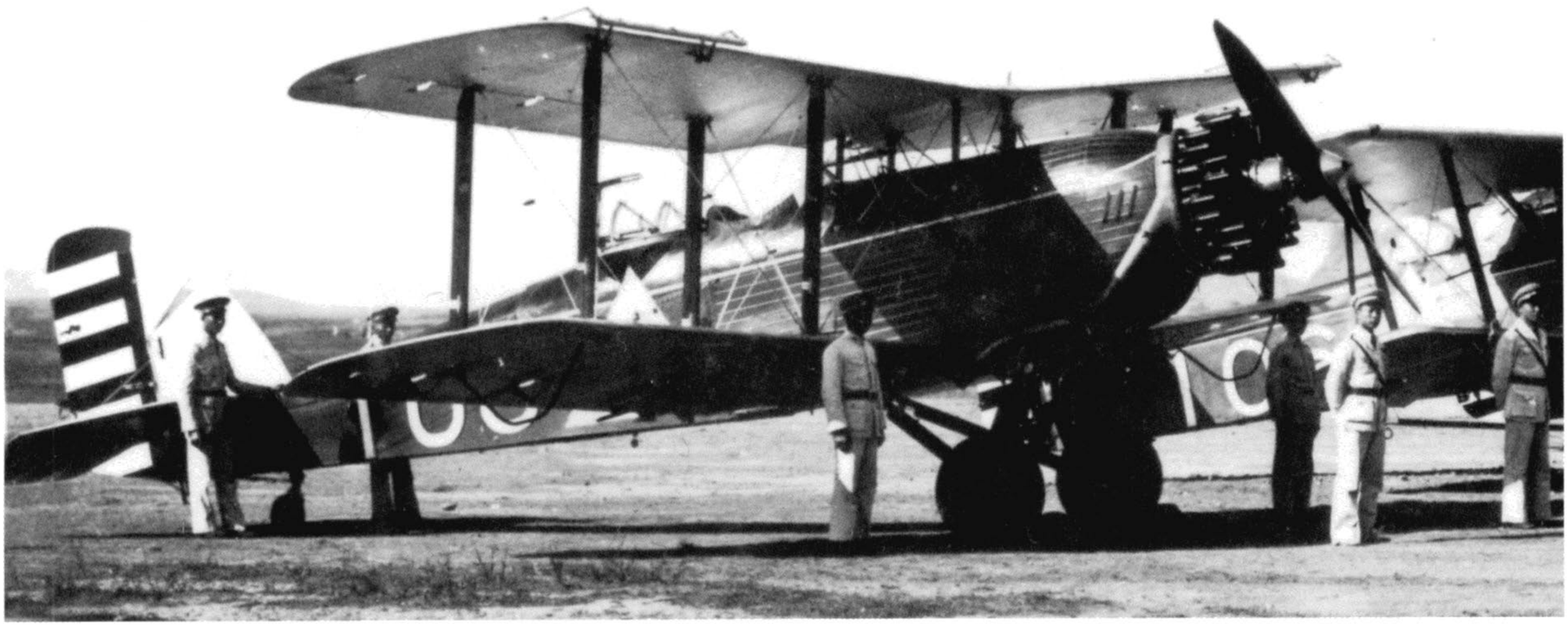
Vultee V-1 NC13771, which was used by CAMCO.

The Waco CSO Straight Wing was sold to the Canton Air Force.

made several attempts before finally taking off from Macao on 19 March, only to disappear without trace.

L E Gale reportedly sold five three-seat Waco aircraft to the Central Government on 18 January 1934 and there is a photo of a Waco RNF in what looks like CAF markings. One MNF, c/n 3484 (ex NC11246), was exported from Frank E Parsley, Seattle, to J A Barr, Shanghai, in 1934. As Barr was Chang Hsueh-liang's private pilot this was probably the second-hand Waco MNF that was acquired by him from L E Gale in January 1934. An American report dated 1

In January 1931 L E Gale Company's pilot G W Brophy disappeared in this Waco RNF named "Feng Wang" (Phoenix) while attempting to fly to Manila on the Philippines.



Thw Westland Wapiti VIII was ordered by the Kwangsi Air Force.

March 1935 credited Shantung with a Waco F (125 hp Menasco), probably a MNF and possibly the one previously seized by the Japanese at Mukden.

Westland

Westland was represented in China by the FEACo. A **Westland Wapiti IV** (470 hp A S Jaguar VIC) two-seat bombing and reconnaissance biplane, c/n WA.2150, was sent out as a demonstration aircraft in December 1930. It arrived in January 1931 and was registered in Hong Kong as VR-HAC on 25 March. It was shown at Mukden and in Nanking and participated in the big Nanking air pageant on 2 May 1931. In 1932 this machine was sold to Kwangsi together with three of the **Wapiti VIII** (A S Panther IIA) version (Kwangsi s/ns 107-109). These aircraft received their British CofAs on 22 February, 25 February and 4 March 1932 and delivery was made in the summer of 1932. They were later used by the 1st Squadron, and after 1936 by the CAF's 34th Squadron.

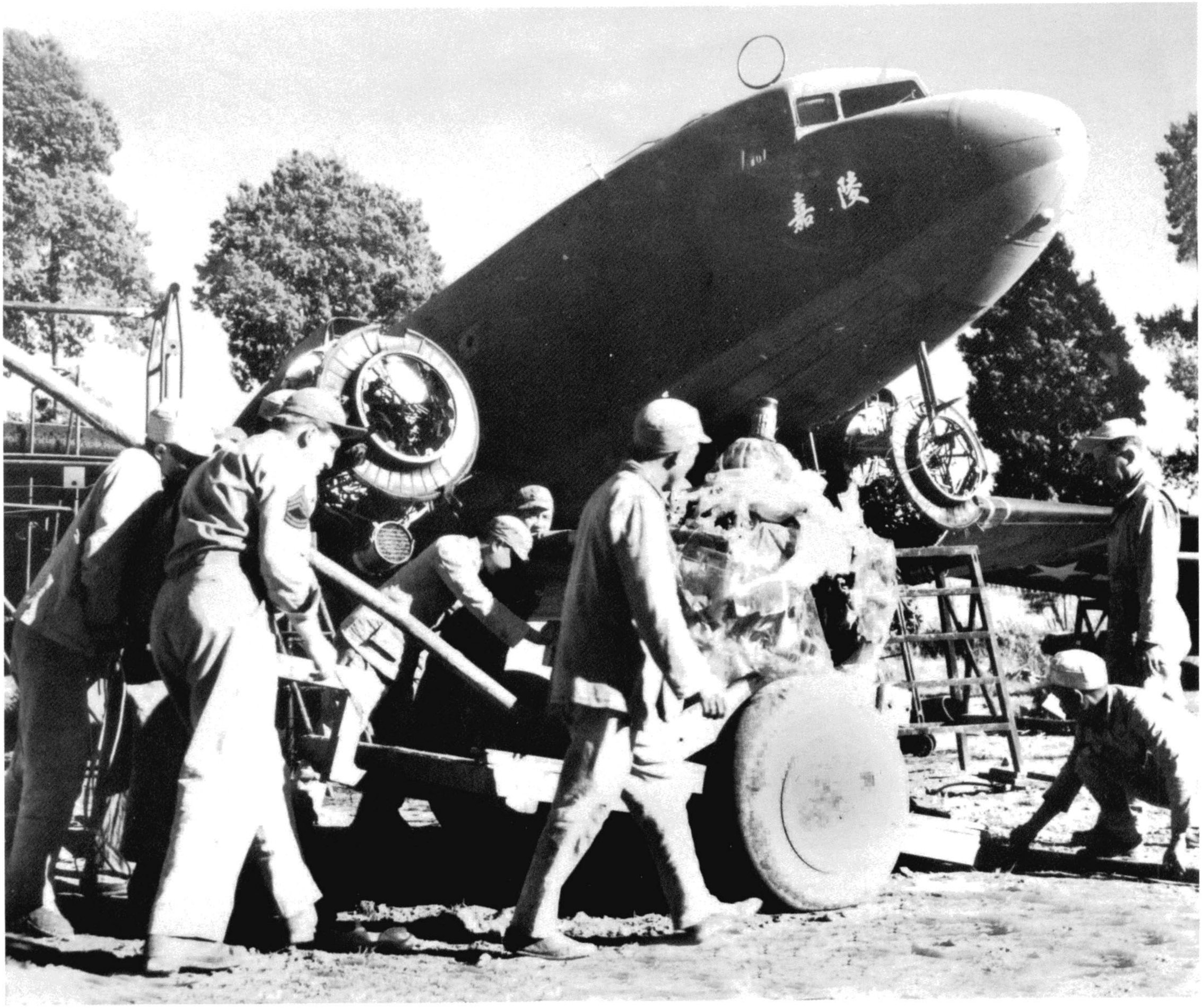
White

One hundred **White PT-7** (200 hp Warner Super Scarab) two-seat training biplanes were allegedly ordered for the CAF late in 1939. By that time the first prototype had not yet been built, however, and eventually no aircraft of this type were ever delivered.

Yakovlev

The Soviet Union supplied five **Yakovlev UT-1** (150 hp M-11E) single-seat advanced training monoplanes to China against a contract signed on 22 March 1938. A total of 15 of the **UT-2** (110 or 125 hp M-11) two-seat monoplane trainer were delivered to the flying school that was established at Kuldsha in August 1939. They were formally ordered on 11 January 1940. Another pair of UT-2s was delivered in 1940-41. The Chinese designation for the UT-2 was Y-2 "Mosquito".

The single-seat Yakovlev UT-1 aerobatic trainer.



CNAC's Douglas DC-3 No 41 "Chiating".

Aircraft Types Acquired by the Chinese Air Force 1942-1945

From 1941 China's main source for aircraft deliveries was the USA. American supply of new aircraft directly from the factory to China was as follows, but in addition many aircraft were delivered second-hand, and others were used by Chinese or Chinese-American units based in India.

1940: 30 (July-December)
1941: 141
1942: 410
1943: 384
1944: 223
1945: 37 (January-August)

Beechcraft

Eight examples of the **Beech AT-7 Navigator** (450 hp Pratt & Whitney R-985) were delivered under Lend-Lease to the Chinese Flying Training School (FTS) in India in 1943. Nine of the ten **UC-43 Travellers** (450 hp Pratt & Whitney R-985-AN-1), c/ns 3116 (GB-2 Bu 01645) and 3189-3197 (UC-43 42-38665 to 42-38673), that were transferred between November 1942 and February 1943 were received by the CAF.

Cessna

Fifteen **Cessna AT-17 Bobcat** (245 hp Jacobs R-755-9) trainers were delivered under Lend-Lease to the Indian FTS in September-October 1944 (42-39173 and 39283, 43-8077, 8101, 8168, 8169, 8172, 8178, 32433, 32440 to 324442, 32645, 32654 and 39283).

Consolidated

A total of 138 **Consolidated B-24 Liberators** were allocated to China under Lend-Lease in 1944-45. Only 37 were delivered, however (US s/ns 44-42270, 42276, 42461, 42462, 42468, 42469, 42470, 42472, 42475, 42476, 42477, 42481, 42483, 42484, 42485, 42500 to 42503, 42505 to 42510, 42512 to 42516, 42520, 42521 and 42527 to 42533). In 1943 the CAF sent crews to the USA for training on the B-24. In March 1943 the B-24-equipped 308 Bomb Group, USAAF, was transferred to the 14th Air Force in China, where it was to remain until June 1945. The CACW Operational Training Unit (OTU) in India received six B-24s in January 1944 and an additional four in April. Some of the Chinese pilots flew on missions as co-pilots, but due to command disputes, the 37 B-24Ms (1,200 hp Pratt & Whitney Twin Wasp R-1839-65) delivered to the CAF flew in from India only at end of the war.

Curtiss

China received a large number of **C-46 Commandos**. When the Burma Road was cut off in 1942 it was decided to start an airlift from India to China - the "Hump". In December 1942 the India China Wing (ICW) of the USAAF Air Transport Command was formed and it was renamed the India China Division on 1 July 1944. Seven C-46s were delivered to the ICW in 1942, 204 in 1943, 304 in 1944 and 33 in 1945[3]. Five were delivered to the 10th Air Force, USAAF, in 1943, 101 in 1944 and 402 in 1945.

The CAF received 26 C-46As and C-46Fs (both versions 2,000 hp R-2800) under Lend-Lease in 1945:

C/n	USAAF s/n	Departure from USA
C-46A		
324	43-47253	4.45
326	43-47255	4.45
328	43-47257	4.45
330	43-47259	4.45
367	43-47296	4.45
369	43-47298	4.45
371	43-47300	4.45
375	43-47304	4.45
373	43-47302	5.45
375	43-47304	5.45
387	43-47316	5.45
413	43-47342	5.45
415	43-47344	5.45
417	43-47348	5.45
419	43-47348	5.45
423	43-47352	5.45
417	43-47346	6.45
421	43-47350	6.45
423	43-47352	5.45
425	43-47354	6.45
427	43-47356	6.45
429	43-47358	6.45
431	43-47360	6.45
C-46F		
22447	44-78624	8.45
22449	44-78626	8.45
22450	44-78627	7.45 Crashed during delivery
22451	44-78628	8.45

Twelve C-46Es, c/ns 2933-2935 and 2937-2945, were earmarked for delivery to China in 1945, but remained in the USA. A great number of C-46s were delivered in April 1946 to China for use by the Air Force and by CNAC, and later during the Civil War still more were acquired. A total of 27 C-46s were used by CATC and the UNRRA used this type as well.

Many Curtiss P-40s of different versions found their way to China. First came the 100 **H81-A3s** (1,090 hp Allison V-1710-33) delivered in 1941 for the AVG (The "Flying Tigers")[4]. Later in the war there was a planned CAF target operational deployment of ten fighter squadrons (100 aircraft) with the P-40, P-43 and P-66. From 1 April 1944 this was increased to 15 squadrons with 150 aircraft. A total of 409 P-40Bs, P-40Es, P-40Ks, P-40Ms and P-40Ns were received until December 1943 and until May 1944 another 62 P-40s were received. They were used by the CAF (four squadrons of P-40s and P-43s), the Composite Wing in China and in India, and the OTU in India. On 1 May 1944 there were 343 P-40s in China and India and 18 more were en route.

Some 30 **P-40E Kittyhawks** (1,150 hp Allison V-1710-39) were diverted to China and were shipped on the "Ferne Glen" to Africa. They arrived in February 1942 and were collected there by AVG pilots and ferried to Burma during the spring. A batch of 27 was allocated to the CAF (US s/ns 41-36804 to 36830) in June 1942 and shipped in August. By December only nine had been delivered to China. 600 **P-40Ks** (1,325 hp Allison V-1710-73) were intended for Lend-Lease to China but only a few were supplied there and some went into USAAF service in the China-Burma-India theatre. The **P-40M** (15 aircraft, 43-5434, 5446, 5450, 5451, 5456, 5463, 5692, 5694, 5707, 5710, 5712, 5713, 5716, 5719 and 5721) and **P-40N** both had the same engine (1,200 hp Allison V-1710-81).

The 51st Fighter Group, USAAF, was operating with P-40s (mostly P-40Ks) in India from 1942 as part of the 10th Air Force and in March 1943 the China Air Task Force, which had operated the P-40 since the disbandment of the AVG, became the 14th Air Force. The Chinese-American Composite Wing was formed within the 14th Air Force with eight squadrons of P-40Ns. Total Lend-Lease P-40 allocations to China was 1,226. Of these 377 were transferred and 330 received by the CAF (probably 27 P-40Es, 15 P-40Ms, 25 P-40Ks and 267 P-40Ns).

Douglas

Thirty-three **Douglas A-20 Bostons** were to have been delivered to China under Lend-Lease in 1941, but these

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3 In addition 46 were delivered to the "North African/India China Wing" in 1944.

4 According to Curtiss company documents these were Model 81A-3s. However, the c/n plate of P-8115, c/n 15452, which has been found, is clearly marked the "H-81-A-2".

plans were cancelled and a tentative assignment of 50 A-20Bs was cancelled on 31 August 1943.

Four examples of the **C-39** (975 hp Wright R-1820-55), a version of the Douglas DC-2, were allocated to China in March 1942 (US s/ns 38-509, 38-516, 38-521 and 38-531), but in the end none of them reached the CAF.

The **C-47 Skytrain** and **C-53 Skytrooper** (1,200 hp Pratt & Whitney 1830-92) were military versions of the Douglas DC-3 and many were delivered to China, starting in 1942. The C-53, C-47 and **C-47A** had the same type of engine, but the **C-47B**, which was made especially for the "Hump" operation, had the 1,200 hp R-1830-90.

Twenty-five civil American DC-3s that were requisitioned for use on the India-China supply route across the Himalayas - the "Hump" - left the USA in April-May 1942 and were assigned to the 10th Air Force, USAAF. By mid-June 39 C-47s, C-48s and C-53s had arrived for the USAAF and many more were to follow. In December the India-China Wing, Air Transport Command, was formed and in July 1944 this unit became the India-China Division. The "Hump" was finally closed in November 1945.

Lend-Lease allocations to China included only two C-53s in 1942 and 38 C-47s in 1943-45, but in reality ten C-53s and 77 C-47s were transferred. Out of these only two C-53s and 18 C-47s were received by the CAF, however. Deliveries from the USA of C-53/47s were reported to be 22 in 1942, 16 in 1943, 27 in 1944 and nine in 1945, but this seems not to cover all deliveries. At least 70 had in fact been received in India by April 1944.

CNAC was allotted the first of 12 C-53s on 17 April 1942 and they received about 50 C-47s between 1942 and 1945. The CAF got five C-47s in July 1943, five in March 1944 and by 1945 the 101st to 104th Squadrons operated the C-47. CATC received 11 C-47s and C-53s in 1945 and 15 more were acquired in 1946. Many more C-47s, C-47As and C-47Bs were delivered to China from January 1946.

C-47/C-53 Deliveries to China

C/n	USAAF S/n	Date	Notes
C-53			
4852	41-20082	25.3.42	To CNAC
4853	41-20083	25.3.42	To CNAC
4871	41-20101	10.4.42	To CNAC
4883	41-20113	19.4.42	To CNAC
4881	41-20111	7.5.42	To CNAC
4879	41-20109	10.5.42	To CNAC
4902	41-20132	26.5.42	To CNAC
4904	41-20134	26.5.42	To CNAC
4927	42-6475	26.5.42	To CNAC
4929	42-6477	5.6.42	To CNAC
4952	42-6500	29.6.42	
4953	42-6501	15.7.42	
7407	42-15890	29.8.42	To CNAC
7406	42-15889	29.9.42	To CNAC
C-47			
4681	41-18556	18.10.42	To CNAC
4729	41-38626	27.11.42	To CNAC
4730	41-38627	19.12.42	To CNAC
6038	41-38655	20.12.42	
6034	41-38651	4.1.43	To CNAC
6035	41-38652	4.1.43	To CNAC
6037	41-38654	8.1.43	To CNAC
6150	41-38691	6.2.43	To CNAC
6151	41-38692	6.2.43	To CNAC
6222	41-38763	16.2.43	To CNAC
6221	41-38762	27.2.43	To CNAC
9014	42-32788	29.3.43	To CNAC
9110	42-32884	7.4.43	To CNAC
9013	42-32787	13.4.43	To CNAC
9109	42-32883	13.4.43	To CNAC
4694	41-18569	28.6.43	
4472	41-18410	29.6.43	
4592	41-18500	29.6.43	
6025	41-18664	29.6.43	
4587	41-18495	4.7.43	
C-47A			
9291	42-23429	29.5.43	To CNAC
9416	42-23554	27.5.43	To CNAC
9292	42-23430	6.6.43	
9597	42-23735	1.7.43	To CNAC
9596	42-23734	3.7.43	To CNAC
9417	42-23555	5.7.43	To CNAC
9760	42-23898	5.7.43	To CNAC
9761	42-23899	5.7.43	To CNAC
9955	42-24093	3.8.43	To CNAC
9956	42-24094	3.8.43	To CNAC
10158	42-24296	12.9.43	To CNAC
10159	42-24297	12.9.43	To CNAC
18902	42-100439	13.10.43	To CNAC
18901	42-100438	6.11.43	To CNAC
19061	42-100598	12.43	To CNAC
19062	42-100599	after 12.43	To CNAC
19314	42-100851	25.1.44	To CNAC
19621	43-15155	25.2.44	To CNAC
19620	43-15154	25.2.44	To CNAC
19313	42-100850	6.3.44	To CNAC
19452	42-100989	6.3.44	To CNAC
19453	42-100990	6.3.44	To CNAC
19804	43-15338	2.4.44	To CNAC
19803	43-15337	4.4.44	To CNAC
19928	43-15462	24.5.44	
19929	43-15463	14.5.44	To CNAC
20090	43-15624	27.5.44	
20091	43-15625	29.5.44	To CNAC
20252	43-15786	18.6.44	To CNAC
20253	43-15787	11.6.44	To CNAC
20700	43-16234	4.8.44	
20702	43-16236	9.8.44	
20804	43-16338	13.8.44	
20803	43-16337	16.8.44	
20805	43-16339	16.8.44	
20806	43-16340	16.8.44	
20699	43-16233	18.8.44	
20701	43-16235	18.8.44	
20869	43-16403	10.9.44	
20870	43-16404	16.9.44	
20867	43-16401	19.9.44	
20868	43-16402	24.9.44	
20388	43-15922	21.12.44	

Stearman PT-17 Kaydet.

C-47B			
26305	43-49044	15.11.44	
26306	43-49045	15.11.44	
26307	43-49046	8.12.44	
32527	44-76195	28.1.45	
32531	44-76199	18.2.45	
32588	44-76256	2.45	
32530	44-76198	after 2.45	
32803	44-76471	16.3.45	
32817	44-76485	22.3.45	
32847	44-76515	29.3.45	
32915	44-76583	3.4.45	
32947	44-76615	8.4.45	
26067	43-48806	30.6.45	
C-47			
4573	41-18481	.45?	
6245	42-5657	10.9.45	
C-47A (B)			
13243	42-93342	10.9.45	
16694	42-93748	10.9.45	
18909	42-100446	10.9.45	
32582	44-76250	10.9.45	C-47B
13250	42-93348	16.9.45	
13282	42-93377	16.9.45	
13406	42-93489	16.9.45	
13695	42-93749	16.9.45	
13693	42-93747	16.9.45	
13711	42-93763	16.9.45	
13718	42-108987	16.9.45	
25891	43-48630	16.9.45	C-47B
25900	43-48639	16.9.45	C-47B
20344	43-15878	28.9.45	
20375	43-15909	28.9.45	
20389	43-15923	28.9.45	
20390	43-15924	28.9.45	
20638	43-16172	28.9.45	
13704	42-93757	19.11.45	
20323	43-15857	19.11.45	
20332	43-15866	19.11.45	
20335	43-15869	19.11.45	
20309	43-15843	4.12.45	
20356	43-15890	4.12.45	
20324	43-15858	9.12.45	
13264	42-93361	9.12.45	
19838	43-15372	9.12.45	
20250	43-15784	9.12.45	
20257	43-15791	9.12.45	
20314	43-15848	9.12.45	
20369	43-15903	9.12.45	
20373	43-15907	9.12.45	
20384	43-15918	9.12.45	
20392	43-15926	9.12.45	
20394	43-15928	9.12.45	
20652	43-16186	9.12.45	
C-47B			
25859	43-48598	9.12.45	
26023	43-48762	9.12.45	
26490	43-49229	9.12.45	
26711	43-49450	9.12.45	

26911	43-49650	9.12.45
26948	43-49687	9.12.45
27124	43-49863	9.12.45
32595	44-76263	9.12.45
32766	44-76434	9.12.45
32968	44-76636	9.12.45
20810	43-16344	29.12.45
20812	43-16346	29.12.45
C-47A		
20320	43-15854	19.12.45
13236	42-93336	29.12.45
13410	42-93492	29.12.45
C-53		
7313	42-47371	21.12.45

Fairchild

A large number of **Fairchild PT-19 Cornells** were allotted to China under Lend-Lease in 1944. A total of 250 was requested but deliveries were suspended after 127 second-hand PT-19s (175 hp L-440-1), **PT-19As** (200 hp L-440-3) and **PT-19Bs** (200 hp L-440-3) had been shipped to the Chinese FTS in India in September-November 1944. They were from several different production batches.

Lockheed

In 1941 33 **Lockheed A-29 Hudson IIIAs** (1,200 hp Wright R-1820-87 Cyclone) were allocated for Lend-Lease to China. They had originally been earmarked for the RAF and had RAF serial numbers, but their USAAF identities were: 41-23247 to 23260, 41-23282, 41-23284, 41.23286 to 23291, 41-23583, 41-23587 to 23597. Only 28 were transferred, however, and of these only 19 were received by the CAF.

The A-29s were to have been shipped to Rangoon in December 1941 and were originally intended for the 2nd AVG, which was not formed. After arrival in India in August 1942 they were instead assigned to the 2nd Bomb Group, CAF. The CAF had 14 on hand in three squadrons in November 1944, but at least nine machines were later salvaged and added to the inventory. Ten were transferred to CATC in June 1944.

The 21st Photo Reconnaissance Squadron, 14th Air Force, went into action in July 1943 with the F-4 and F-5 reconnaissance versions of the twin-engined P-38 Lightning fighter. A total of 50 **F-5B**, **F-5E**, **F-5F** and **F-5G Lightnings** (1,425 hp Allison V-1710) were allocated to China in 1944-45. Fifteen of these (F-5Es) were transferred to the CAF in August 1944, but only 14 of them were received in 1945. In the summer of that year the 12th Squadron, 20th Air Group, CAF, took over nine F-5Es in India and flew to Suining, Szechwan.

North American

Twenty **North American AT-6D Texans** (600 hp Pratt & Whitney R-1340-AN1) (USAAF s/ns 42-85653 to 85672) were allocated to China under Lend-Lease and were delivered to the Chinese FTS in India in January 1945. The AT-6 was called the "Big North American", while the earlier NA-16 was the "Little North American". Several more were supplied after 1945. A few were used by CAT and CATC aquired AT-6D 42-85666 and AT-6Fs 44-81780 and 44-81935 in 1946.

A total of 489 **B-25 Mitchells** were allocated for Lend-Lease to China during the period 1943-45. Of these 131 were transferred, but only 73, plus 11 coming from USAAF units, were eventually delivered to the CAF. A contract signed on 23 January 1942 was for 150 NA-93s (B-25Cs), but it was cancelled and the aircraft later delivered were of the B-25D, B-25G, B-25H and B-25J models (all same engine, 1,700 hp Wright R-2600-13).

CAF target deployment for the B-25 was four squadrons (40 aircraft). At first ten B-25Cs were received by the OTU in India. The 21 B-25Ds received were used by the OTU in India, the Composite Wing in China (one squadron) and in India, and 105 B-25Hs and 10 B-25Js were received between December 1943 and spring 1944 for the Composite Wing in India and from January 1944 in China. Crews of the 1st Bomb Group (1st, 2nd, 3rd and 4th Squadrons) converted to the B-25 at Karachi in the autumn of 1943 and were then attached to the CACW.

Lend-Lease allocations of the **P-51 Mustang** (1,490 hp V-1650-7) reached 624, although only 50 P-51Cs were transferred and 48 received by the CAF between December 1944 and April 1945. A few examples of the **F-6** reconnaissance version were apparently included as well. The Mustangs replaced the P-40s in the 3rd and 5th Fighter Groups of the CACW. When the war ended another 261 P-51Ds and P-51Ks were acquired.

Republic

On 30 June 1941 an order was placed for 125 **Republic P-43A Lancers** (1,200 hp Pratt & Whitney R-1830-57) (USAAF s/ns 41-31448 to 41-31572) that were allocated to China under Lend-Lease. Only 108 were transferred (in the USA) and many of these were to remain with the USAAF in India. The first one was picked up at Karachi where the aircraft were assembled in April 1942. The CAF had 22 on hand by November 1943. They had originally been intended for the 3rd AVG but were used by the CAF's 4th Fighter Group.

Republic P-43A Lancer.

Ryan
Lend-lease allocations to China included 70 **Ryan PT-22 Recruits** (160 hp Kinner R-540-1) (US s/ns 41-15177 to 15216 and 15298 to 15327) that were delivered to the Chinese FTS in India in April and August 1943.

Stearman
A batch of 150 **Stearman PT-17 (A75N1) Kaydets** (220 hp Continental R-670), c/ns 754059-754208 (42-15896 to 42-16045), were delivered in March-May 1942 and used at the Chinese Elementary Flying Training School at Walton, Lahore. This unit had 140 PT-17s when it moved to China in 1945. In 1947 the Chinese Government ordered two new-built A75N1s (185 hp Lycoming O-435-11) and 20 B75N1s (Continental R-680-4), which were delivered in July 1947.

Stinson
A few **Stinson L-5 Sentinels** (175 hp Lycoming O-435) were used by the CACW in 1945 and at least 24 L-5s and 5 L-5Bs were supplied to the CAF in 1945-46. A few received civil registrations as well, including L-5C 44-17411 that was used by CATC from 1946.

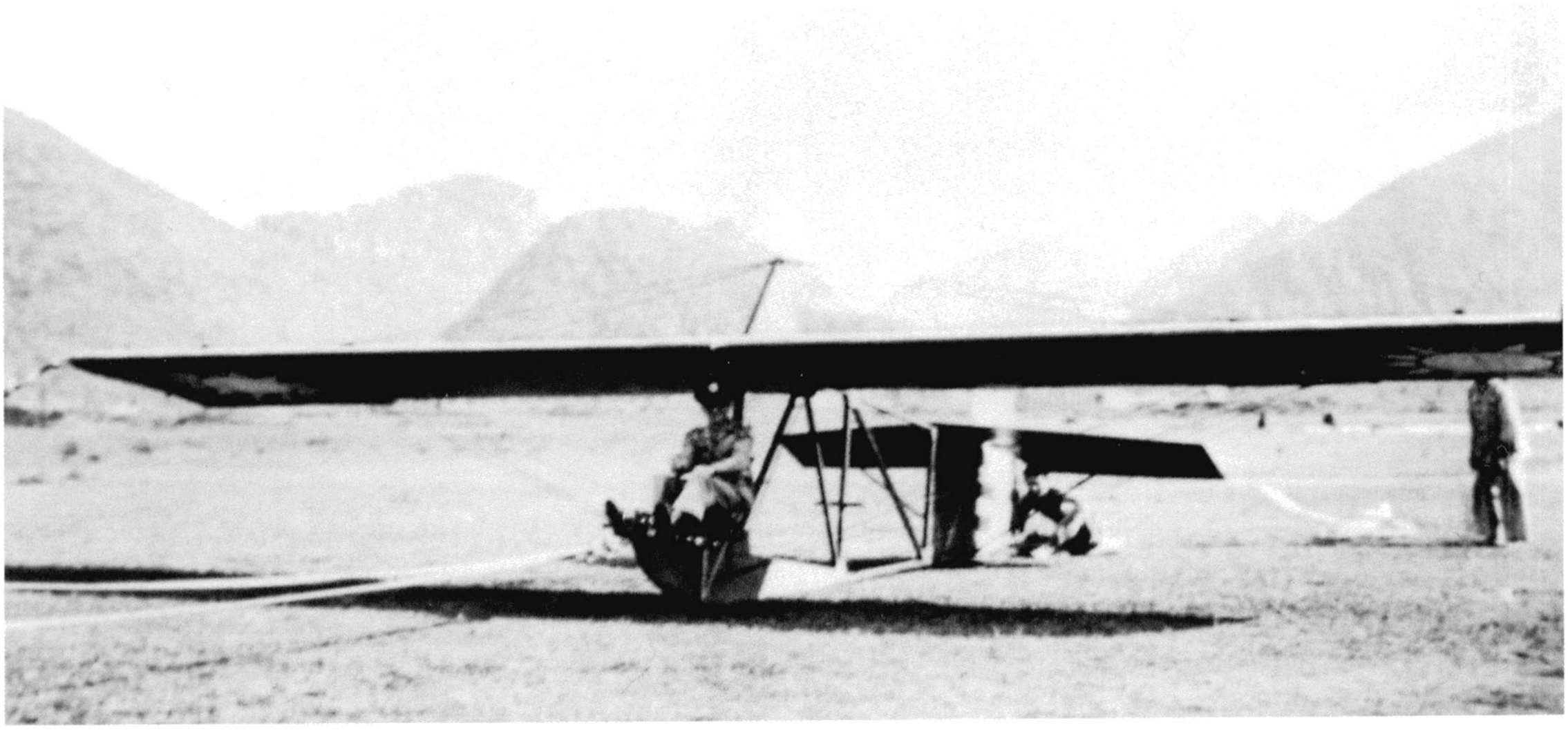
Vultee
Sweden ordered 144 **Vultee 48-C Vanguard** fighters (1,200 hp Pratt & Whitney R-1830-33 (S3C4-G), but the US Government embargoed the delivery. The designation P-66 was assigned (USAAF s/ns 42-6832 to 42-6975, c/ns 501 to 644) and 100 were allotted for Lend-Lease to Great Britain (serials BW208-BW307 assigned, for use in Canada), but this was changed to China instead in May 1941. All 144 were allotted, but many were put into emergency service with the USAAC in December 1941 and only 128 were finally shipped to Karachi between March and August. Twenty-four were lost at sea and in the end only 81 (or 79) were received by the CAF.

The aircraft were picked up by the USAAF between October 1941 and April 1942 and the first shipment to China left Long Beach in March 1942 and was followed by another one in April. By November 1943 the CAF had 53 on hand in eight squadrons. They were used by the 3rd and 5th Fighter Groups and later also the 11 Fighter Group, but were replaced by the P-40 at the end of 1943.

Thirty of the **BT-13 Valiant** (450 hp Pratt & Whitney R-985-AN-1 Wasp Junior) were supplied to China under Lend-Lease after July 1944 for use by the Chinese FTS in India. Known US s/ns: 41-14604, 14619, 14662, 14691, 14709, 14721, 14773, 14792, 14885, 14891, 14904, 14907, 14940, 15024, 15026, 15067 and 15131.

Vultee P-66 Vanguard.

Gliders and Sailplanes in China



A glider of the SG-38 type.

Gliders were built and flown at several places in China during the 1930s. Although a small number was purchased from other countries, the majority was produced domestically.

Sui Shih-hsing and Chu Ch'en at Tientsin built what was said to be "the first Chinese glider" late in 1931. One of the founders of the Fukien Commercial Aviation School at Amoy, Ch'en Kuo-liang, started to design a glider in May 1934 during his stay at the Liuchow factory in Kwangsi. It was completed at the end of July and was taken over by the Kwangsi Air Force and used for glider training. In the summer of 1935, Li P'o-ling and Ma Yi-chou of the Central Aviation Academy at Chien Chiao, Hangchow, built a fabric covered steel frame glider and the Mechanical Engineering Department of the Ch'inghua University in Peking built a glider in 1936.

Li Chung-tsung, executive manager of Eurasia, was a glider enthusiast and arranged a glider meeting in 1935. The following year he started a glider club and hired H K Haeusing, a German probably, as a consultant. Li then built a glider in three months and by 8 September he had successfully completed three flights. He built a modified glider early in 1937, but plans to purchase two advanced gliders from Germany were frustrated by the outbreak of the Sino-Japanese War.

On 19 January 1934 an International Glider Association headed by a German named Frantz was founded in Tsingtao. Under the leadership of White Russian Homiakoff, the Tsingtao Naval Air Station repair shops built three gliders based on a French design and in March 1937, the first of these was towed airborne for the first time.

When the Japanese invaded Manchuria in 1931 the Tientsin Telegraph Company responded with a fund raising campaign, which was administrated by the "Ta Kung Pao" newspaper. In 1935, part of the contributions was expended on the purchase of a sailplane from Germany. The DFS Rhönsperber that was obtained was not delivered until in June or July 1939, however, and was then christened "Ta Kung Pao". After a test flight by Wei Chao in August and further flights in November in Chungking, it was then turned over to the Chinese Air Force.

Wei Chao, a native of Kwangsi had headed the so-called Glider Training Class that was established in June 1930. A glider was built in December 1939 by the 8th Maintenance Shop, CAF, in Chengtu, and on 12 March 1940 Wei died when this glider crashed during a demonstration in Chungking. Other gliders built by the 8th Maintenance Shop included a primary glider and a Hütter H-17.

In 1941-42 Lo Jung-an, Head of the Aero Department of the Central University in Chungking, and his students

designed and built six gliders under the designation XG1. The Chengtu University built a glider in 1938 and in 1942 Ch'inghua University staff in Kunming built a glider. Between 1940 and 1943 a glider manufacturing factory was operated by Eurasia in a dilapidated temple in a suburb of Kunming.

The National Gliding Association was formed in Chungking on 4 April 1941 to promote glider-related activities and gliding clubs were started in various cities in China. On 25 December 1941 Chungking held a glider exhibition and in 1942 the city hosted the second Annual Glider Exhibition and a naming ceremony for 100 Gliders. The Glider Training Class established by the Aeronautical Commission (CAF) in June 1939 was transferred to the so-called Chinese Glider Headquarters in Chungking in 1940.

The Glider Factory (also called the Central Glider Manufacturing Factory) owned by the National Gliding Association and located at Shao Lung Kan, 15 km from Chungking, was completed in the autumn of 1942. There were 400 employees and it built 68 gliders in the first 100 days of operation. The gliders were either used by the glider school or sent to flying clubs belonging to the association. As the school is known to have used the Hütter H 17, that type must have been among those built by the factory. During the years 1942-44 it produced more than 70 Dickson gliders and Lo Jung-an, Hao Keng-sheng and Li Shou-t'ung headed it in succession.

In October 1941, the Chinese Glider Headquarters established a repair shop at Peipei, near Chungking, which was headed by German-educated Ch'ien Tsuch'eng. During 1942 and 1943 this facility built more than 10 Dickson primary gliders.

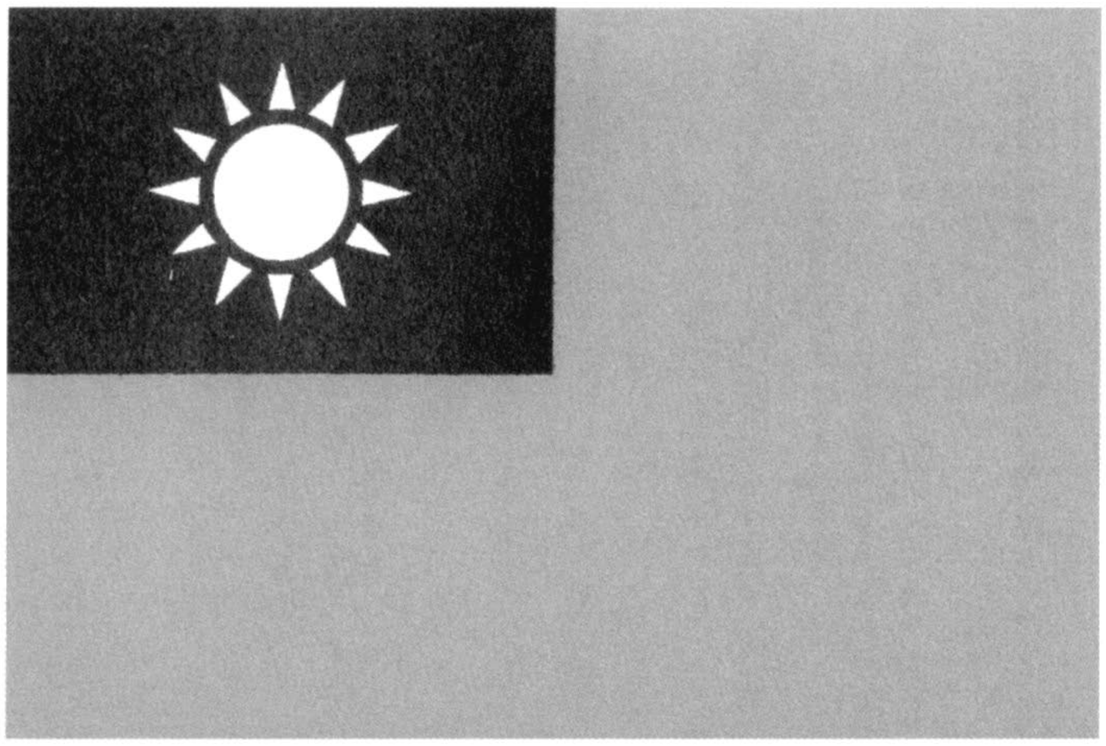
The Kweilin Glider Factory, which was located 3 miles south-east of the city, was visited by an American intelligence officer on 19 December 1942. It belonged to the CAF and had been opened in April 1942. It had originally been intended for the manufacture of aircraft, but due to the shortage of materials only gliders had been built on a small scale. Two types were produced: a high-wing open primary glider with framework fuselage and a fabric-covered high-wing glider. In 1943 this facility designed and built six tandem seated gliders.

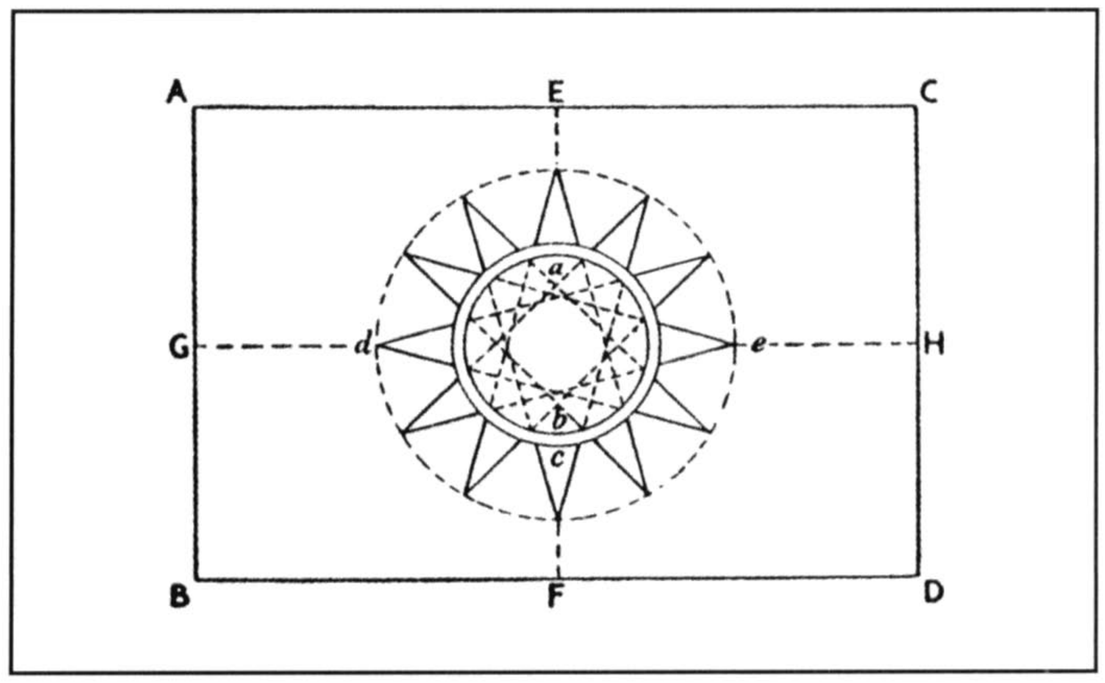
Between 1942 and 1944, the Chengtu Glider Manufacturing Factory, headed by Li Kuo-chu and Ning Shou-chung, produced more than 20 Dickson gliders and the CAF Air Force's No 2 Aircraft Factory at Chunlinkow, Nanchwan, or Nanchung, 100 miles from Chungking, built six primary gliders and 30 Hütter H-17 gliders between 1940 and 1942. During 1942 and 1943, No 3 Aircraft Factory in Chengtu built more than 30 DFS Kranich gliders.

It is estimated that more than 200 gliders were produced in China between 1940 and 1944.

Grunau Baby sailplane named "Youth". (Gen Lowe Chung-yang)

Chinese Aircraft Markings and National Insignia



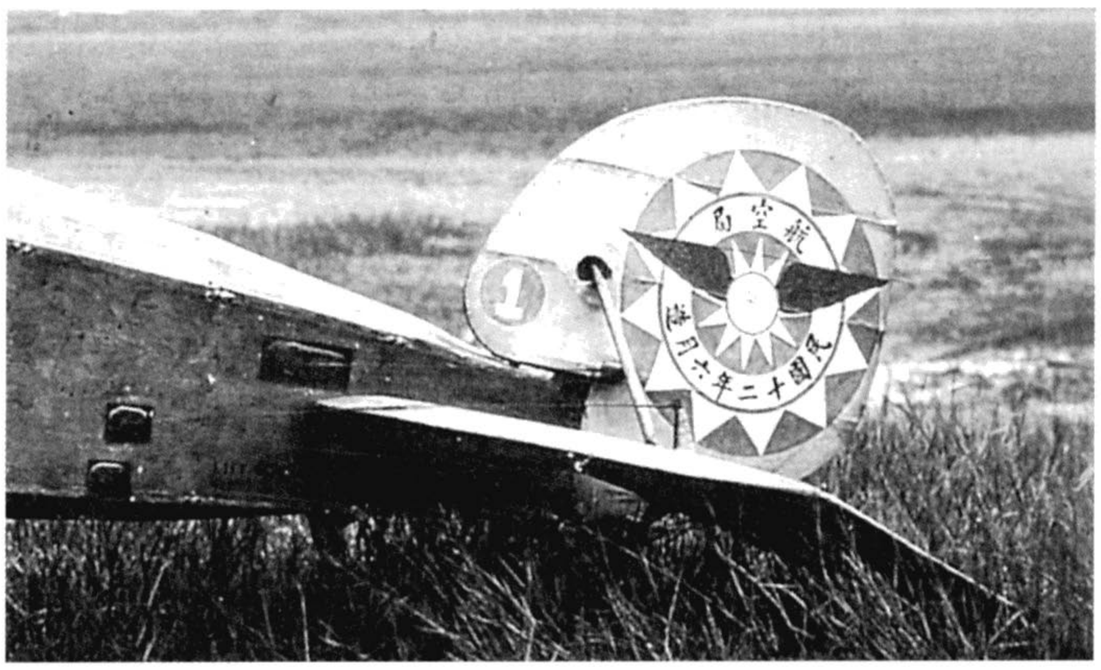


The design of the 12-pointed sun enblem.

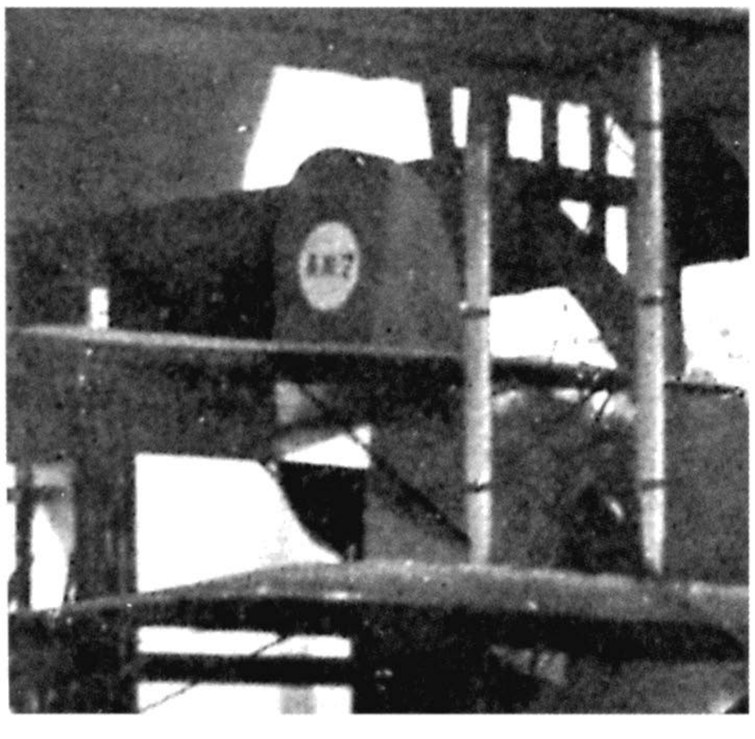
The Kuomintang flag, a white 12-pointed sun emblem on blue background, was adopted in Canton in 1895 and Sun Yat-sen authorised the so-called Nationalist flag, with "white sun in blue over red", in 1906. This was a red flag with the KMT flag in the upper left quarter. The Chinese Republic adopted the red, yellow, blue, white and black five-barred flag in 1912, but the Nationalist flag became the naval flag of China. The colours of the horizontal bars of the Republican flag signified the five main races in China. The Nationalist flag was officially adopted as the national flag on 8 October 1928.

Several types of national insignia have been used on Chinese aircraft and many flew in their original markings, for example French national insignia, or with no markings at all. The first national marking was probably the five-pointed star insignia introduced by the newly formed Chinese Republic in 1913. It was carried on wings and fins and consisted of a star made up of five differently coloured segments, clockwise from the top: red, yellow, blue, white and black. This was replaced by (from top to centre) red, yellow, blue, white and black roundels on fuselage and wings. The tail marking consisted of (from top) red, yellow, blue, white and black horizontal stripes on the rudder.

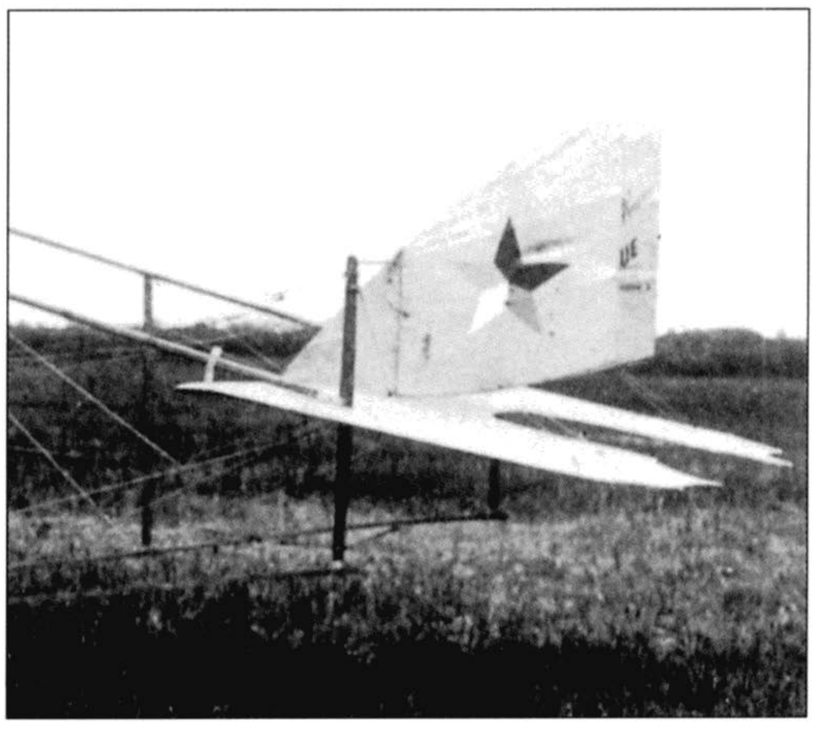
Manchurian aircraft carried the same roundels and rudder stripes, but often with a small light coloured circle added in the centre of the upper half of the rudder. The wing roundel sometimes had a thin white outline. On 30



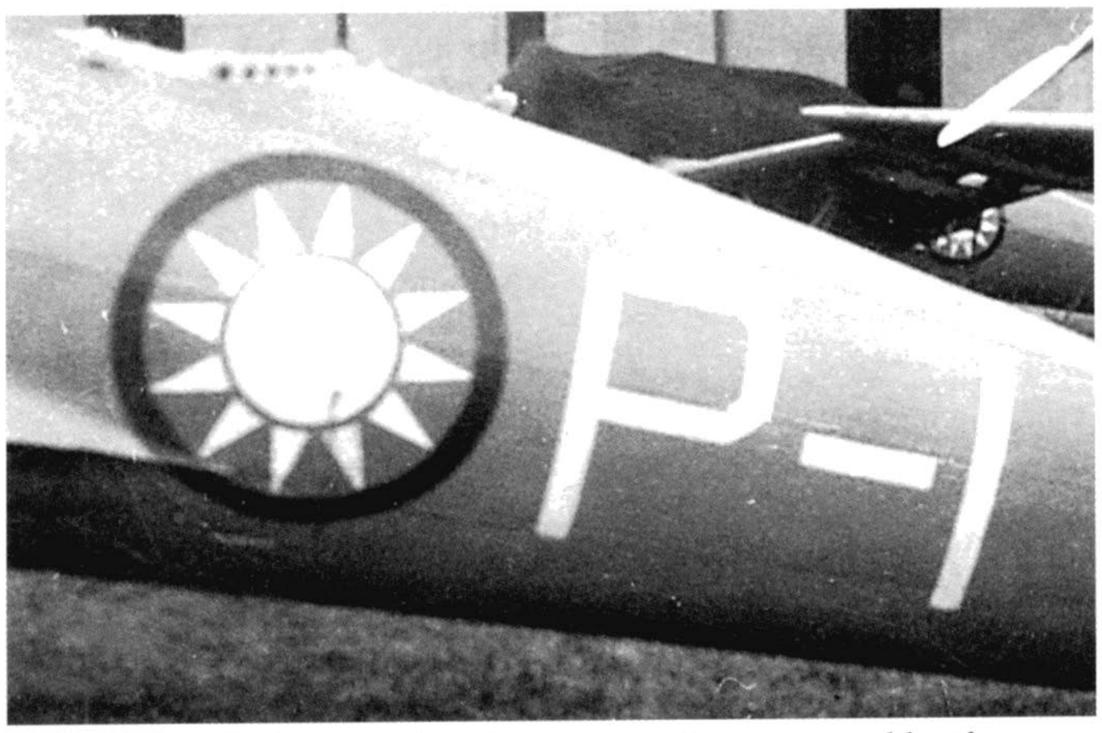
Early type of national insignia used by the Canton Government.



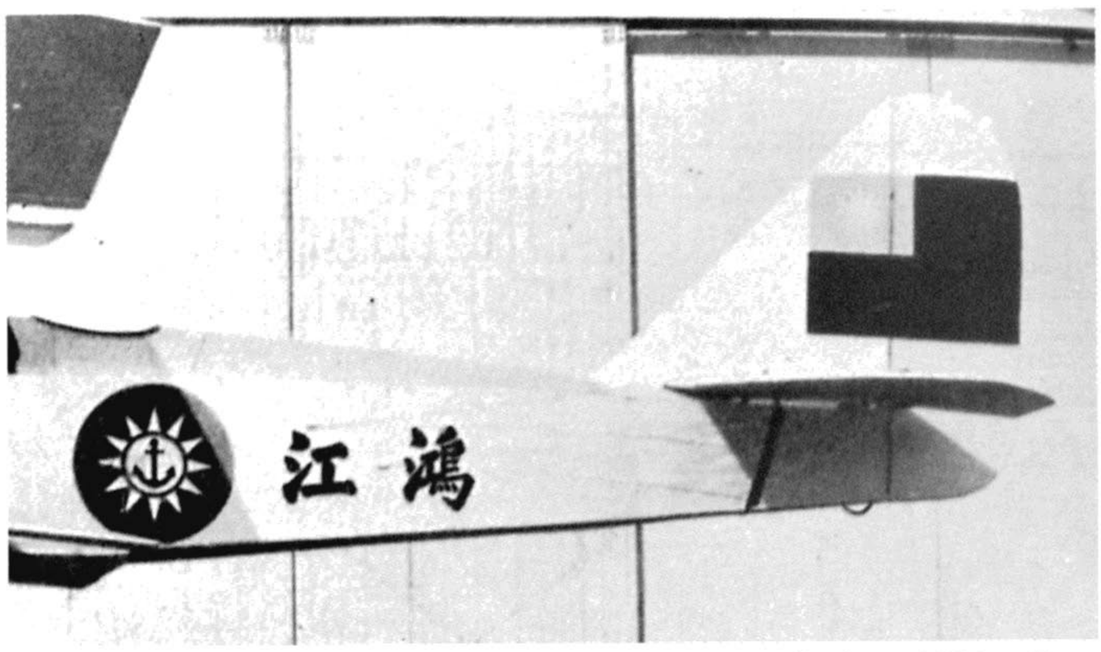
Rudder marking of Manchurian Air Force aircraft. Colours from top: red, yellow, blue, white and black. Light coloured circle with aircraft serial number.



The five-pointed star insignia used on Chinese aircraft in 1913.



The national insignia with red outer ring that was used by the Canton and Nanking (Central) governments.



National markings of Chinese naval aircraft in the late 1920s. Sun insignia with anchor and national flag.

December 1928 Machuria adopted the Nationalist flag and a new national insignia was introduced in the spring of the following year. The then current Nationalist insignia, the 12-pointed white sun on blue circle with red outer ring, was carried on the wings, but from photographic evidence it seems that there was an extra (blue) outer ring. The lower half of the rudder was painted red and the upper half was blue and had a superimposed white 12-pointed star/sun. These markings were in use until the Japanese occupation of 1931.

When Chang Hsueh-liang ordered a de Havilland DH 60 Moth de Luxe for his own personal use it was painted all over (except for the engine cowling which was bare metal) in his own special colours: deep blue and yellow.

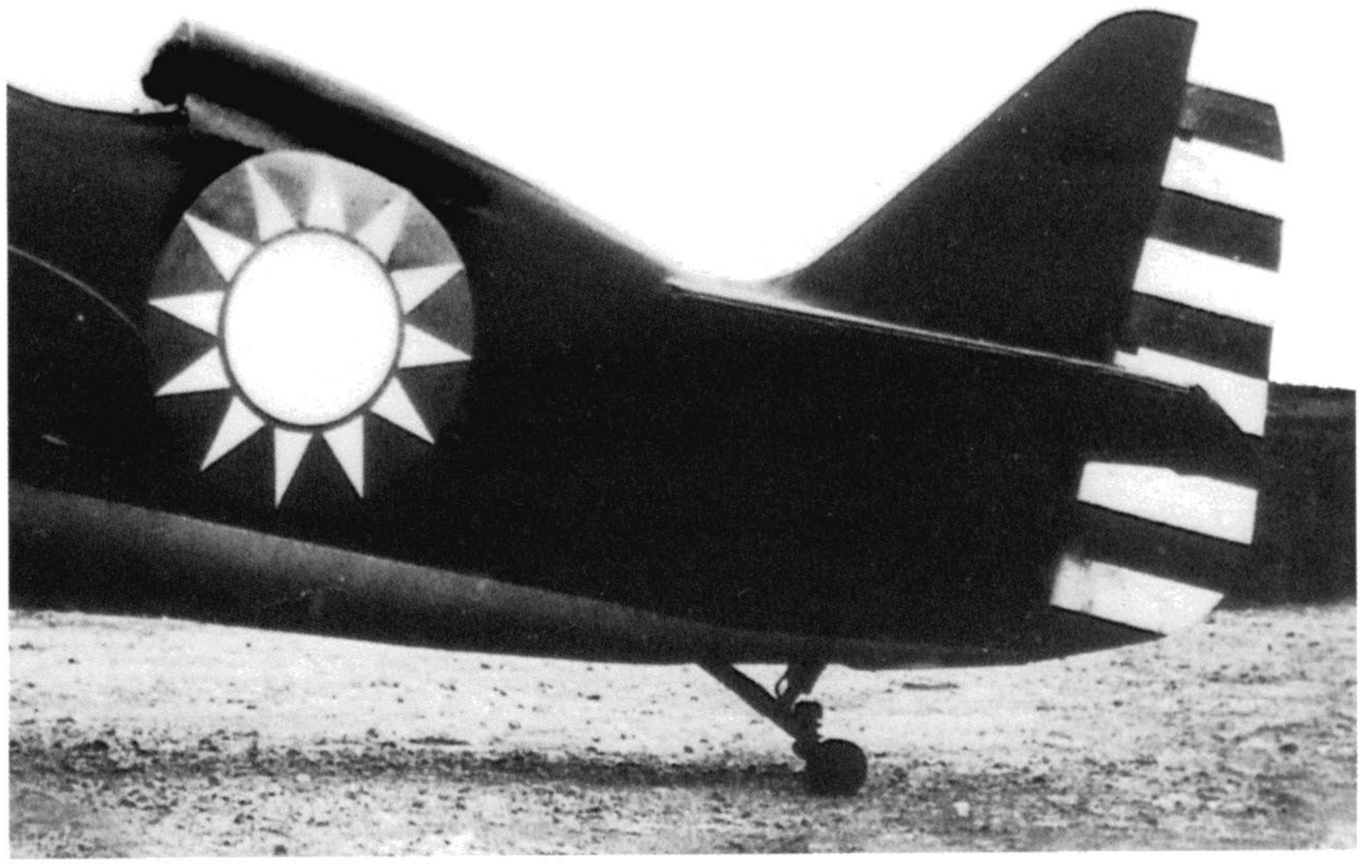
Canton and Nanking Governments

In 1923 the Chinese characters for "Chinese Air Force" were painted under the wings of the two Curtiss JN-4D Jennies operated by an aviation school at Courtland, California, where Chinese-Americans were taught to fly.

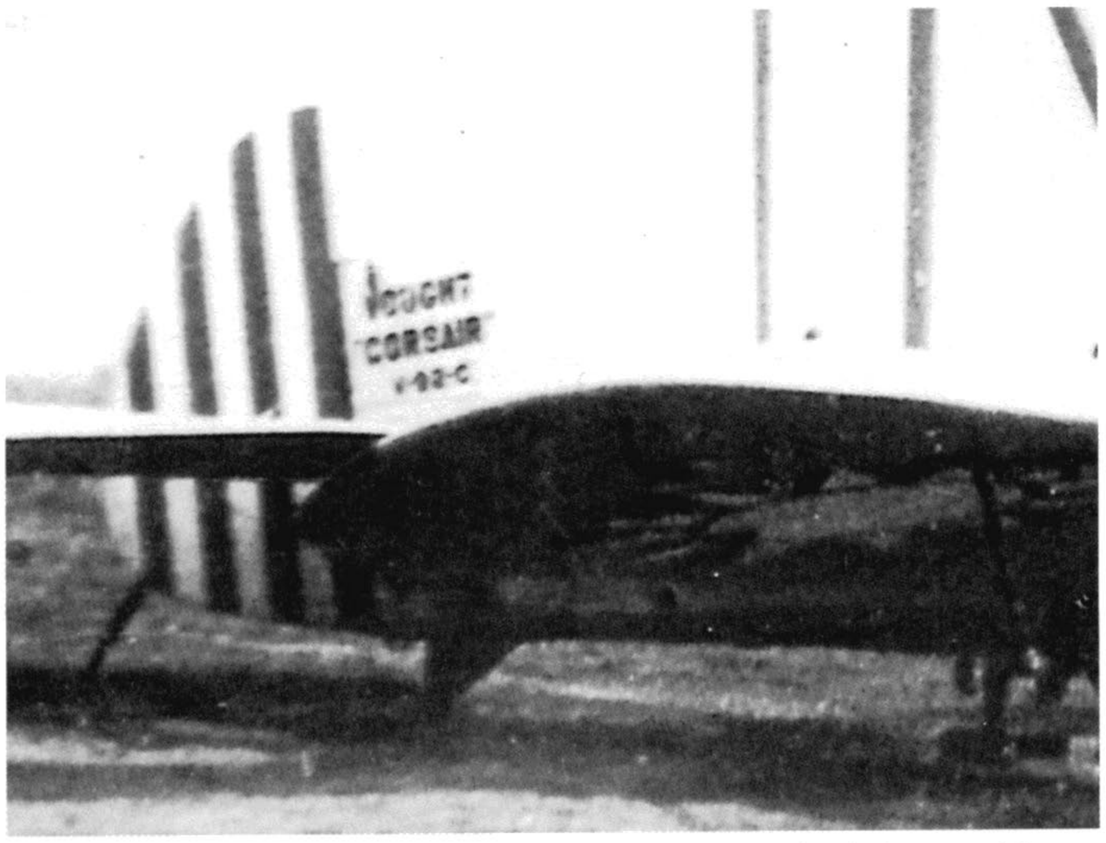
In 1924 aircraft of the "National Forces" were reportedly marked with red bands around the fuselage and wings. In addition they had a band along the trailing edge of the wings outside the chord-wise band, forming an L-shaped marking. In 1926 it was reported that Chinese Government aircraft had "the Army flag on one wing and the Navy flag on the other". An illustration of this showed the red and blue KMT flag and a red flag with a black nine-pointed star with small yellow balls at the ends, but no photographic evidence has been found for any of these marking alternatives.

By 1923 the KMT Government at Canton had introduced the now familiar blue-white sun marking. It consisted of a white 12-pointed sun with blue inner ring and white centre on a blue circle and it was painted on the wings only. A more elaborate version of the same insignia was carried on the fin/rudder. This was a small version of the wing marking, surrounded by a white ring with thin blue outline, the Chinese characters "Hang-k'ung Chü" (Aviation Bureau) at the top and a text describing the individual aircraft at the bottom. Then followed a blue ring with small white triangles forming a second version of the 12-pointed star. Attached to the centre sun were finally a pair of wings in dark colour (gold or red?).

By 1926 a simplified insignia was carried on the wings and on the fuselage. It consisted of the 12-pointed white sun, with blue inner ring and white centre, on a blue circle, and a red outer ring. This marking was used by the Nanking Air Force as well. Often there was no tail marking but sometimes the roundel was painted on the rudder or over the fin and rudder. The Stinson Detroiters operated by the Ministry of Communications were painted silver grey with the national insignia on wings and fin and a circular marking with a golden bird on the forward fuselage.



Standard CAF blue-white national insignia and rudder stripes.

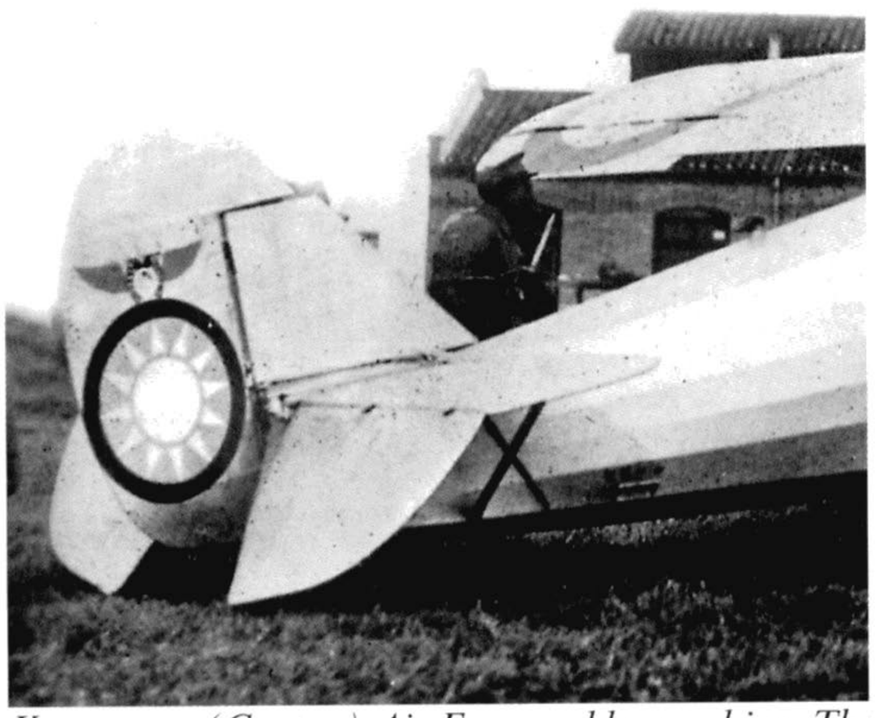


An example of vertical (instead of horisontal) bluelwhite rudder stripes.

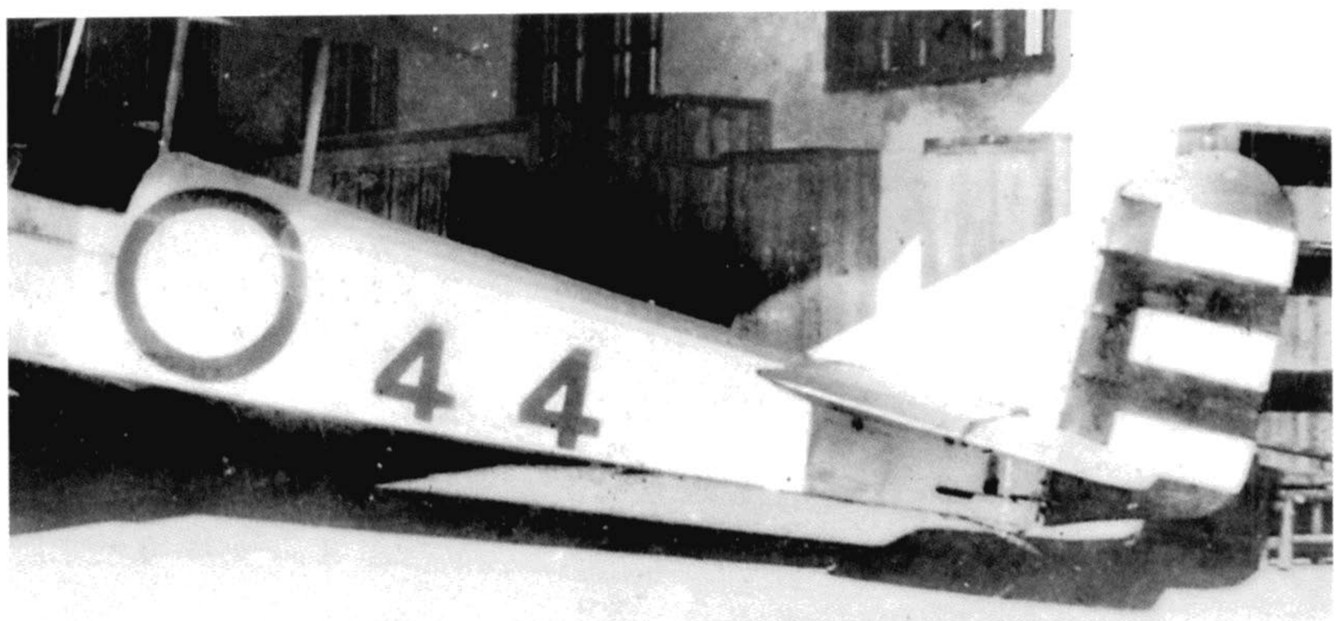
During a period in 1931-32 most Nanking Air Force aircraft carried a special paint scheme. According to one source, wings, fin and tail surfaces were blue, while the rear part of the fuselage was painted red. Judging from photos it seems that only the fuselage was painted, however. The rear part of the fuselage from about the trailing edge of the wings and all tail surfaces were painted in a dark colour, which almost certainly was red, and the rest of the aircraft seems not to have been touched. At a small distance from the front end of red painted area there was a broad white band around the fuselage and then came the aircraft number in white. There were national insignia, normally with red outer rings, on the wings only. When this colour scheme was discarded its seems that the national insignia was again painted also on the fuselage sides and sometimes on the rudder as well.

The red ring on the wing/fuselage insignia was discarded about 1932 and instead six blue and six white horizontal stripes were painted on the rudder. Normally, the points of the white sun/star reached the outer edge of the blue circle, but sometimes the star was considerably smaller than the circle. Occationally there was a thin white outer ring for contrast.

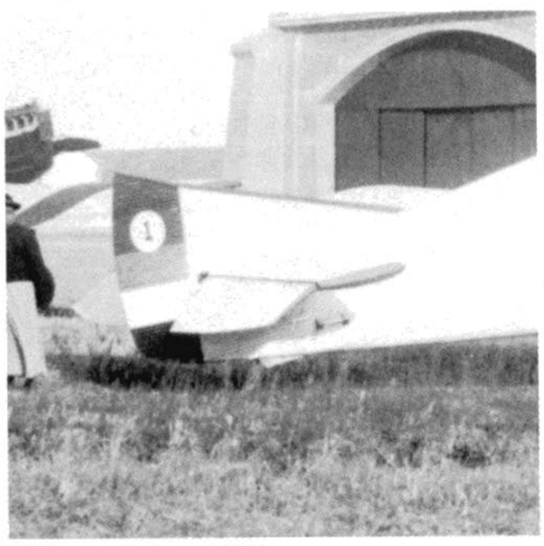
In the late 1930s some ambulance aircraft (Beechcraft 17s and DH 89s) were painted all white with large red crosses on the fuselage and the wings and there were no national insignia. After one DH 89 had been shot down by Chinese anti-aircraft fire in May 1938, ambulance aircraft were camouflaged and normal national insignia were applied.



Kwangtung (Canton) Air Force rudder marking. The Kwangtung Government continued to apply the outer red ring to the national insignia.



Kwangsi Air Force markings. An example of the "empty" ring marking used for a period by Kwangsi.



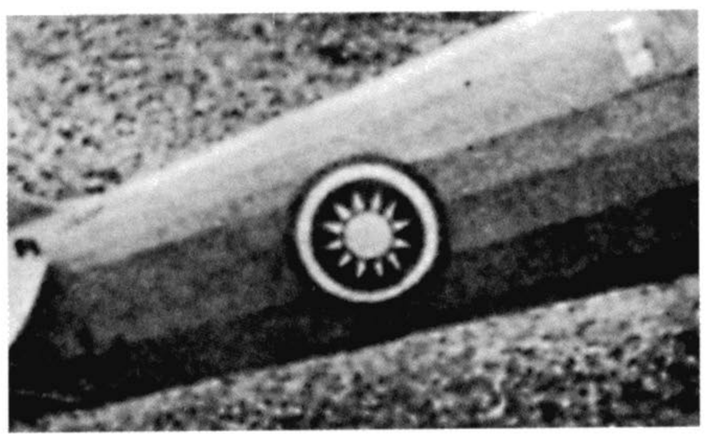
Tail marking of the Shantung Air Force, exactly similar to the Manchurian marking.

After 1928 Manchurian aircraft carried the colours of the KMT flag on the rudder.

Kwangsi Air Force rudder marking and white triangle marking used by Canton and Kwangsi air forces.

Military-style national markings adopted by MKKK airline of Manchukuo.

A typical donation marking of aircraft of the Manchukuo Air Force.



Aircraft of the Japanese-supported Nanking Government carried modified Nationalist national insignia.

Chinese Navy

Until the first part of the 1920s Chinese naval aircraft carried the usual markings of the Chinese Republic: rudder stripes in five colours. In addition it carried the KMT (Canton) 12-pointed white sun on blue circle insignia with red outer ring on the fuselage. In the later part of the 1920s, possibly in 1927, the red outer ring was discarded. At least on some aircraft the fuselage insignia had a black anchor inside the white circle in the middle. From about 1933 this insignia was only painted on the wings. In at least once instance the sun insignia was painted with reverted colours (blue sun on white circle).

The red and blue Nationalist flag with white sun was used as a fin flash on all naval aircraft from the mid-1920s. Around 1933-34 a few aircraft had no markings at all on the fin and from 1934 naval aircraft had three or four vertical blue stripes on white background on the rudder. This type of marking also appeared on some Vought Corsairs.

Provincial Governments

The aircraft of the Shantung Air Force were reported to have carried a national marking consisting of a black square on the upper and lower wing surfaces. From photographic evidence it is clear, however, that this was the black bands painted on all Junkers aircraft at the factory. The only national marking carried was the Republican colours on the rudder with an additional small (yellow) circle on the upper part (as for Manchuria). The aircraft number was painted inside the circle.

The Ryan Broughams acquired by Yünnan had the Nationalist flag as a fin flash.

In November 1933 the Federal Revolutionary Government (People's Government) in Fukien adopted a new flag, which was red and blue (divided horizontally) and had a five-point yellow star in the middle. It seems likely that a corresponding aircraft insignia was used, but no information has come to light on this.

The post-1927 Canton Air Force used the old Nationalist 12-pointed white sun/star on blue circle with red outer ring insignia. It was painted on the wings and normally on the fin as well.

The Kwangsi Air Force introduced a rudder marking in 1932 that consisted of a red(?) vertical stripe at the front edge and four or five red(?) and three to five white horizontal stripes. The old Nationalist national insignia with red outer ring was painted on the wings, but for a certain period it seems that only the red ring without any blue sun marking was applied on the wings and fuselage. Some aircraft had the Chinese characters for "Kwangsi" painted under the lower wing.

A special triangular marking was carried on the fuselage and wings of aircraft of the Canton and Kwangsi air forces during the mid-1930s, probably in order to differentiate them from those operated by the Nanking Government. The triangle was painted black on light surfaces and white on dark surfaces. On the wings it was carried on the left side only, while the normal national insignia with red ring was retained on the right side.

Japanese-Supported Governments

Manchukuo adopted a variant of the old republican five-coloured flag. Each of the five colours signified a different race: Japanese, Koreans, White Russians, Chinese Han and Manchurians. The yellow stripe of the original republican flag, which symbolised Manchuria, was left out and the four

Inscription found on aircraft of the Wuhan Commercial Aviation Company. The two characters in the middle, "Hankow", is the name of the aircraft.

remaining striped were displayed in the canton (upper left quarter) of an otherwise yellow flag. The war flag had the same colours, but the four stripes filled the whole upper half of the flag.

A roundel (from centre and out: red, blue, white, black, yellow) was used on semi-military aircraft, but was carried only on the wings. The fins and rudders were painted yellow, with (from top) red, blue, white and black stripes on the top of the fin, like on the flag. Sometimes the stripes covered the top of both the fin and the rudder, but sometimes there were no markings at all on the tail. Military aircraft carried a roundel with horizontal red, blue, white and black stripes on the upper half. The lower half was yellow. No marking was carried on the fin.

The first aircraft presented to the Nanking Air Force in May 1941 were painted yellow and wore " the emblem of blue sky and white sun against a red background". By June 1941 the Japanese-supported Canton regime planned to organise an air force and were to adopt a national insignia "very similar" to that used by the CAF.

Civil Aircraft

The aircraft of the Macao Aerial Transport Company carried Portuguese national markings in the form of a red Maltese cross on white background on the tail (1920). Ricou,

The "Yu" character as painted on a CNAC on a Douglas DC-2.

The "Chung" marking was carried by all civil aircraft after July 1942.

The "Yu" marking (for Post Office) as carried by Eurasia aircraft. The aft part of the fuselage was painted green, the traditional Chinese postal colour.

who owned the company, was French, which explains why they carried "French colours on the wings", probably in the form of red-white-blue bands.

From 1929 all civil airline aircraft had to carry the character "Yu", an abbreviation for Yu cheng yu (Post Office), on the rear fuselage. This applied to all CNAC, Eurasia and SWAC aircraft, although SWAC normally painted the "Yu" on the fin.

CNAC's Loenings were initially painted blue (front part of the fuselage) and silver grey (rear part of the fuselage and the wings). However, green was the traditional postal colour in China and this was specified for all airline aircraft. For this reason all CNAC's aircraft were painted green and got the "Yu" character immediately after the Japanese attack on Shanghai early in 1932. The fuselage of Eurasia and CNAC aircraft was normally painted green until the mid-1930s, but only the rear part of the fuselage was painted on Eurasia's Junkers F 13s and W 33s. CNAC's Loenings were dark green with grey wings. The Chinese characters of the companies' names were painted in yellow.

The green colour seems to have been discarded later, and CNAC's DC-2s and Fords and Eurasia's Ju 52/3ms retained their original silver-grey or bare metal schemes. The colour scheme of SWAC's Stinson Reliants is not known, but their Stinson Tri-Motor was painted all yellow, at least when delivered in May 1937.

When the Hui-t'ung company was inaugurated in November 1936 all its aircraft had a special company marking

A Waco RNF demonstration aircraft of the L E Gale Company's Aviation Division. It was named "Feng Wang", "Phoenix" in English, and disappeared when company pilot G W Brothy attempted to make a flight in it from mainland China to the Philippines in 1931.

Above:
Douglas DC-2 XT-OBF (CNAC No 40) and Junkers Ju 52/3m XT-AGE (Eurasia No 24, operated by the Ministry of Communications) are rare examples of photos of aircraft wearing the Chinese XT- registrations introduced some time around 1938.

Left:
The first Hong Kong civil aircraft registration, VR-HAA, was carried by an Avro Avian of the Far East Aviation Company.

painted on. It consisted of a red and blue yin and yang symbol (circle) divided vertically, with small red/blue circles inserted in the opposite colour.

In September 1938 German flags were painted on all Eurasia aircraft in order to prevent Japanese attacks, but these identification marks were deleted after a short time and replaced by big Eurasia lettering (Chinese characters). In July 1942 CNAC opted for a more radical way if identification. General Chennault urged the company to adopt an insignia for their aircraft to help the 14th Air force pilots to identify them. After considerable discussion an insignia consisting of a blue circle with the Chinese character "Chung" (middle, a symbol for The Middle Kingdom, or China) superimposed in white was adopted and painted on all aircraft.

In 1936 the Far East Flying Training School invented an insignia for their aircraft, which consisted of a pair of wings with a Chinese sun in the centre, and a Union Jack inside the sun.

The Klemm L 26 that was flown from Germany to China by Sun Tung-kang in 1933 carried one Nationalist and one KMT flag. The privately-owned Peking-based Comper Swift had a white five-pointed star on the fuselage, military national insignia on the wings, a strange variant of the Chinese flag on the fin and the inscription "Liao He" on the fuselage.

A civil aircraft register using the XT- prefix for China was apparently introduced around 1938 for CNAC and July 1940 for Eurasia aircraft, but very little is known about this. The registrations listed here have mostly been taken from photographs.

From 1 May 1943 all aircraft of commercial airlines in China were to be marked as follows:

The Chinese character "Chung" was to be painted in white on a black circle of 48 inches diameter on the upper surface of the left wing, the lower surface of the right wing, and both sides of the rear fuselage. The Chinese characters for the name of the company was to be painted in black on the lower surface of the right wing and the registration on the lower surface of the left wing. Only three aircraft existed at the time: CATC's Junkers Ju 52/3m XT-ATA, and CNAC's Douglas DC-3s XT-BTA and XT-BTB. Lend-lease Douglas C-47s belonging to CNAC and chartered to the USAAF had the "Chung" character markings only and no Chinese registrations.

X-CRIA, the first civil aircraft registration allotted to a Chinese aircraft. This Avro Avian belonghed to the Chinese Navy and was registered in order to facilitate a long distance flight from Great Britain to China in 1929.

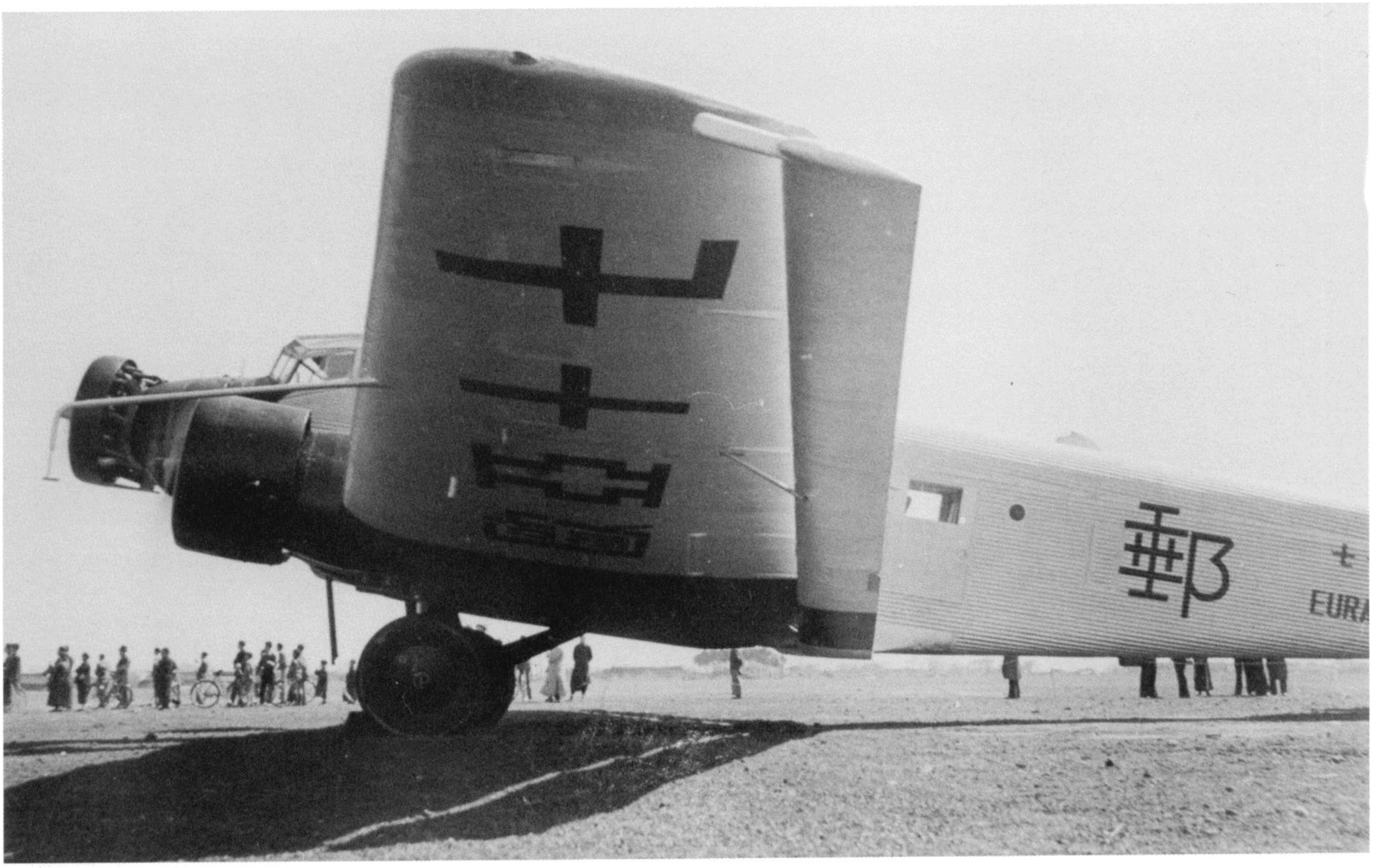
China

X-CRIA	Avro 594 Avian IV	220	3.29	CNN "Amoy"
XT-ABE	Junkers Ju 52/3m	5329	.40?	Eurasia, No 15, ex EU XV
XT-AGE	Junkers Ju 52/3m	4072	.40?	Eurasia, No 24, ex EU XXIV
XT-OBF	Douglas DC-2	1568	.38?	CNAC No 32 "Kweilin"
XT-OBF	Douglas DC-2	1586	38?	CNAC No 40 "K'angting"
XT-ATA, etc				See CATC Fleet List 1943-45, Eurasia Chapter!
XT-BTA	Douglas DC-3		1.5.43	CNAC
XT-BTB	Douglas DC-3		1.5.43	CNAC

Hong Kong

VR-HAA	Avro 616 Avian IVM	361	10.3.30	FEACo. CoA 13.1.30. HKFC. Cr 6.8.31, cx 11.9.30
VR-HAB	Avro 616 Avian IVM	362	19.8.30	HKFC. CoA 10.12.29. Crash 10.2.31, cx 10.12.31
VR-HAC	Avro 616 Avian IVM	466	—	Ntu 6.30. To VR-HAF
VR-HAC	Westland Wapiti	WA.2150	25.3.31	Westland Aircraft. CoA 30.10.30. Cx 25.1.35 as sold
VR-HAD	Avro 616 Avian IVM	465	25.9.30	FEACo. Cx 30.12.31 as sold
VR-HAE	Avro 616 Avian IVM	475	27.11.30	HKFC. 28.5.35 to FEFTS. Wfu, cx 30.5.39
VR-HAF	Avro 616 Avian IVM	466	17.7.31	FEACo. Cx 4.8.31 as sold
VR-HAG	Avro 616 Avian IVM	494	17.7.31	FEACo. Cx 4.8.31 as sold
VR-HAH	Avro 616 Avian IVM	495	17.7.31	FEACo. Cx 4.8.31 as sold
VR-HAI	Avro 616 Avian IVM	554	5.1.32	FEACo. Cx 13.1.32 as sold
VR-HAJ	Avro 616 Avian IVM	555	5.1.32	FEACo. Cx 13.1.32 as sold
VR-HAK	Avro 616 Avian IVM	557	5.1.32	FEACo. Cx 22.2.32 as sold
VR-HAL	Avro 616 Avian IVM	556	5.1.32	FEACo. Cx 22.2.32 as sold
VR-HAM	Avro 616 Avian IVM	559	26.2.32	FEACo. Cx 7.3.32 as sold
VR-HAN	Avro 616 Avian IVM	560	26.2.32	FEACo. Cx 25.7.32 as sold
VR-HAO	Avro 616 Avian IVM	577	29.3.32	FEACo. Cx 8.4.32 as sold
VR-HAP	Avro 616 Avian IVM	578	29.3.32	FEACo. Cx 8.4.32 as sold
VR-HAQ	Avro 624 Six	457	30.3.32	FEACo. Ex G-AAYR. Cx 25.1.35 as sold
VR-HAR	DH 82 Tiger Moth	3100	11.4.32	Arnhold & Co. Cx 11.2.35 as sold
VR-HAS	Avro 616 Avian IVM	579	26.4.32	FEACo. Cx 25.1.35 as sold
VR-HAT	Avro 616 Avian IVM	580	26.4.32	FEACo. Cx 7.5.32 as sold
VR-HAU	Avro 626	569	19.5.32	FEACo. Cx 17.6.32

VR-HAV	AW Atlas II	AW.799	30.5.32	Armstrong Whitworth. Cx 17.6.32. See VR-HCD
VR-HAW	Avro 626	570	30.5.32	FEACo. Cx 15.7.32
VR-HAX	AW Atlas II	AW.802	31.5.32	Armstrong Whitworth. Cx 13.6.32
VR-HAY	SR A.17 Cutty Sark	7	2.6.32	FEACo. To FEFTS. Cx 25.1.35 as sold
VR-HAZ	AW 16	AW.797	2.6.32	Armstrong Whitworth. Cx 26.10.32
VR-HBA	AW Atlas II	AW.800	13.6.32	Armstrong Whitworth. Cx 22.8.32
VR-HBB	Avro 616 Avian IVM	590	25.6.32	FEACo. Cx 25.1.35 as sold
VR-HBC	Avro 616 Avian IVM	591	25.6.32	FEACo. Cx 6.7.32
VR-HBD	AW Atlas II	AW.803	30.6.32	Armstrong Whitworth. Cx 7.7.32
VR-HBE	AW Atlas II	AW.801	6.7.32	Armstrong Whitworth. Cx 15.7.32
VR-HBF	Avro 624 Six	575	13.7.32	FEACo. Cx 23.7.32
VR-HBG	AW Atlas II	AW.804	16.7.32	Armstrong Whitworth. Cx 29.7.32
VR-HBH	AW 16	AW.818	19.7.32	Armstrong Whitworth. Cx 19.11.32
VR-HBI	Avro 616 Avian IVM	599	4.8.32	FEACo. Cx 25.1.35 as sold
VR-HBJ	Avro 616 Avian IVM	598	4.8.32	FEACo. Cx 14.9.32
VR-HBK	AW 16	AW.798	9.8.32	Armstrong Whitworth. Cx 26.10.32
VR-HBL	Avro 616 Avian IVM	601	31.8.32	FEACo. Cx 25.1.35 as sold
VR-HBM	Avro 616 Avian IVM	604	2.9.32	FEACo. Cx 6.1.33
VR-HBN	AW 16	AW.819	21.10.32	Armstrong Whitworth. Cx 21.11.32
VR-HBO	Avro 616 Avian IVM	600	21.11.32	FEACo. Cx 6.1.33. To (Kwangsi?) Air Force “10”
VR-HBP	Avro 616 Avian IVM	605	21.11.32	FEACo. Cx 6.1.33
VR-HBQ	AW 16	AW.820	21.11.32	Armstrong Whitworth. Cx 13.12.32
VR-HBR	Avro 616 Avian IVM	612	21.12.32	A V Harvey. Crash .34, cx 19.8.35
VR-HBS	Avro 616 Avian IVM	602	14.2.33	FEACo. Cx 19.10.33
VR-HBT	Avro 616 Avian IVM	603	14.2.33	FEACo. Cx 19.10.33
VR-HBU	Avro 616 Avian IVM	611	14.2.33	FEACo. Cx 19.10.33
VR-HBV	Avro 616 Avian IVM	608	22.2.33	FEACo. Cx 19.10.33
VR-HBW	Avro 616 Avian IVM	609	22.2.33	FEACo. Cx 19.10.33
VR-HBX	Avro 626	571	6.3.33	FEACo. Cx 19.10.33
VR-HBY	Avro 616 Avian IVM	610	9.3.33	FEACo. Cx 19.10.33
VR-HBZ	Avro 626	620	8.5.33	FEACo. Cx 19.10.33
VR-HCA	Avro 626	634	8.5.33	FEACo. Cx 19.10.33
VR-HCB	Avro 616 Avian IVM	616	6.6.33	FEACo. Cx 19.10.33
VR-HCC	Avro 616 Avian IVM	617	6.6.33	FEACo. Cx 19.10.33
VR-HCD	AW Atlas II	AW.799	22.6.33	FEACo. Ex VR-HAV, CoA 19.4.33. Cx 19.10.33
VR-HCE	Avro 637	637	15.7.33	FEACo. Cx 19.10.33
VR-HCF	Avro 616 Avian IVM	615	20.7.33	FEACo. Cx 19.10.33
VR-HCG	Avro 616 Avian IVM	614	20.7.33	FEACo. Cx 19.10.33
VR-HCH	Avro 637	635	2.8.33	FEACo. Cx 19.10.33
VR-HCI	Avro 637	636	11.8.33	FEACo. Cx 19.10.33
VR-HCJ	Avro 616 Avian IVM	619	28.10.33	FEACo. Cx 14.11.33
VR-HCK	Avro 616 Avian IVM	618	28.10.33	FEACo. Cx 16.11.33
VR-HCL	Avro 631 Cadet	683	19.2.34	FEACo. Cx 30.7.34
VR-HCM	Avro 631 Cadet	684	19.2.34	FEFTS. Cx 12.11.42
VR-HCN	Avro 631 Cadet	685	19.2.34	FEFTS. Cx 25.5.42
VR-HCO	Avro 626	573	19.2.34	FEFTS. Cx 28.11.34
VR-HCP	Avro 637	665	7.3.34	FEACo. Cx 28.11.34
VR-HCQ	AW Atlas II	AW.821	21.6.34	Armstrong Whitworth. Cx 5.7.34
VR-HCR	AW Atlas II	AW.822	21.6.34	Armstrong Whitworth. Cx 5.7.34
VR-HCS	Avro 631 Cadet	558	18.8.34	FEFTS. Ex G-ABRS. Crash .36, cx 7.2.36
VR-HCT	Avro 671 (C.30A)	734	27.12.34	FEFTS. Cx 19.11.36
VR-HCU	DH 60GIII Moth Major	5133	26.4.35	FEFTS (CoA 4.3.35 to Aircraft China Ltd). Cx 30.4.38
VR-HCV	Miles M.3A Falcon Maj.	149	27.5.35	FEACo. (FEFTS) Cx 30.5.39 as sold. To VR-RAP .38
VR-HCW	DH 87B Hornet Moth	8129	23.8.37	FEFTS. Cx 16.1.42
VR-HCX	DH 87A Hornet Moth	8002	17.12.37	FEFTS. Ex G-ADJU. Cx 30.9.39
VR-HCY	Klemm L 26a III	225		Ex G-ABBU, ntu 1938
VR-HCY	Porterfield 35-70 Flyabout	245	26.7.38	Archibald Lewis. Not present in HK 31.12.40. Cx 22.10.41 as sold



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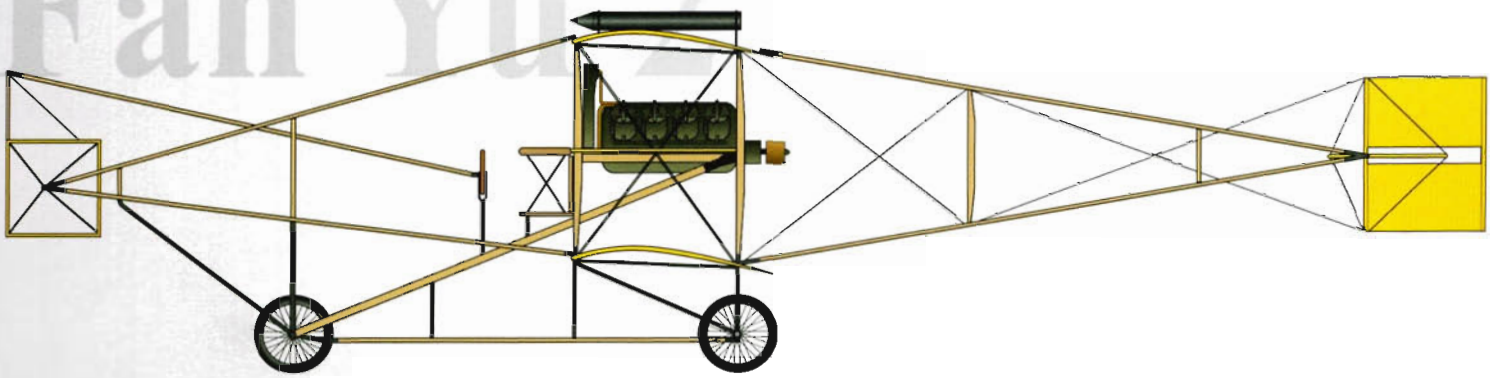
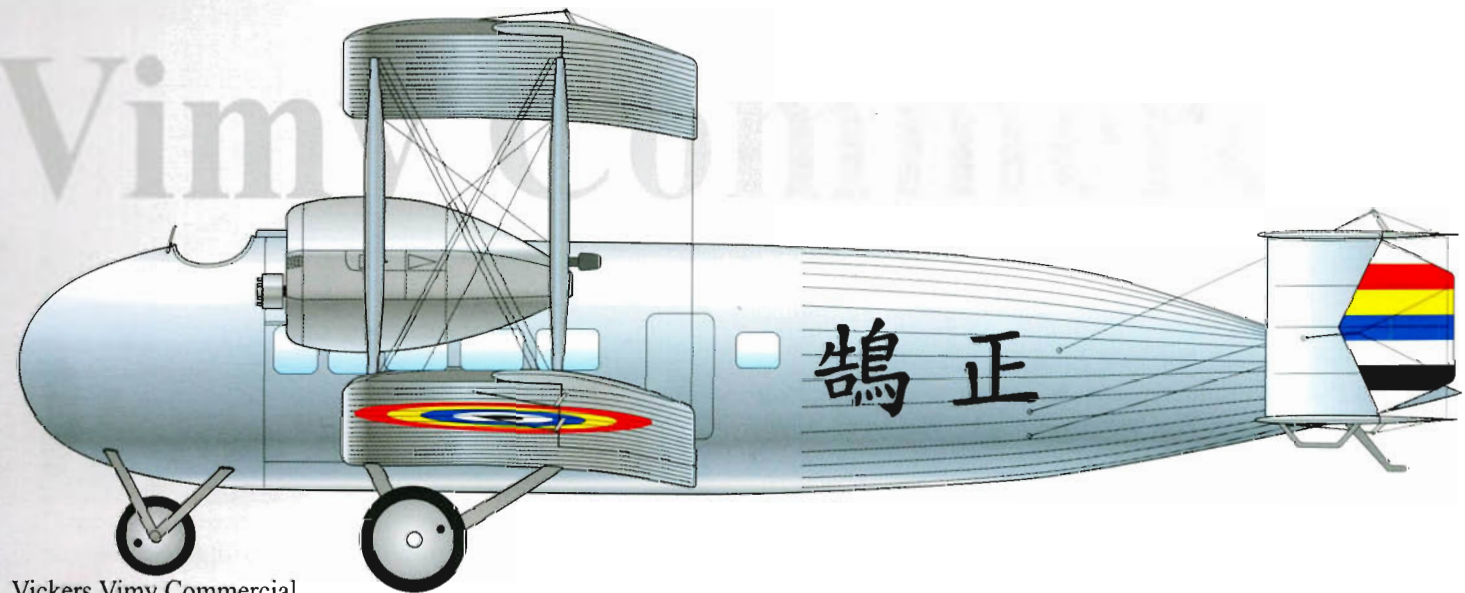
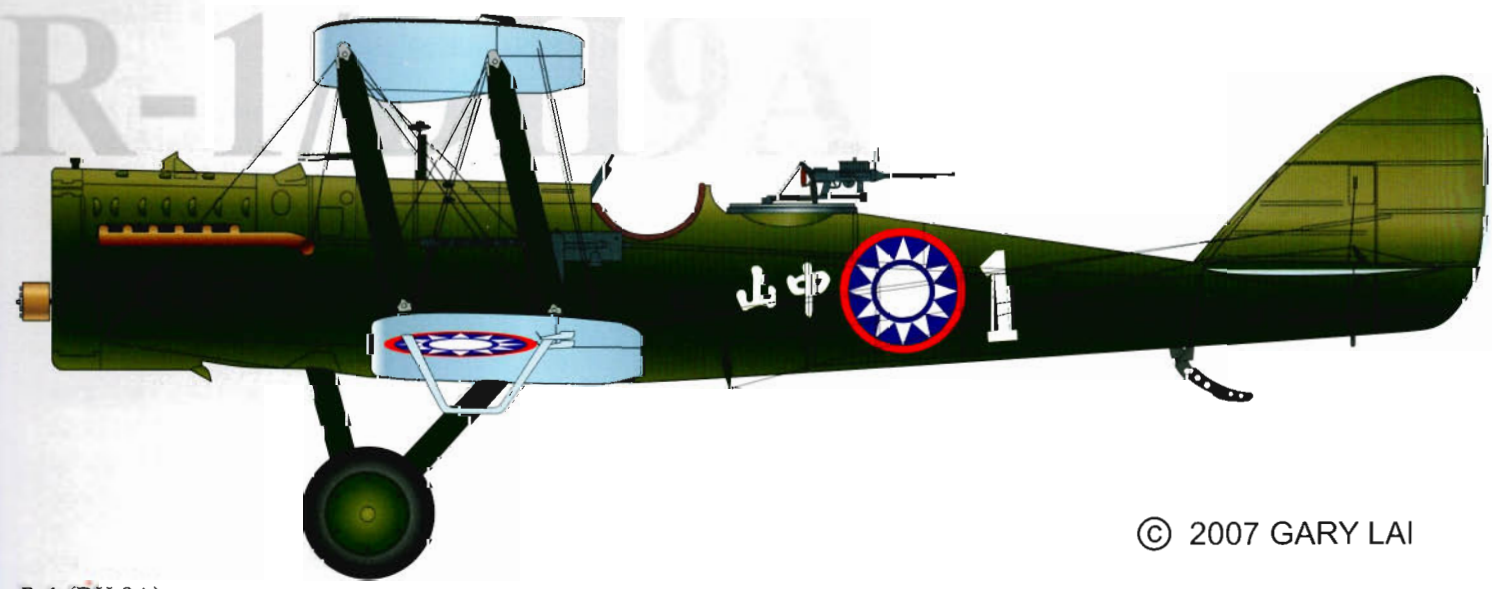


Fan Yu 2
Chinese-American Feng Yu (Fung Joe Guey) built an aircraft of the Curtiss pusher type for his own use. He flew in the USA and later in China and he was killed in an accident when his plane crashed in Canton in August 1912.



Vickers Vimy Commercial
Vickers Vimy "Cheng Ku" of the Chinese Republican Air Force at Peking. Forty Vickers Vimy transports were shipped to China in 1920-21. On 27 June 1921 "Cheng Ku" was flown by British pilot instructor Major Patterson and Chinese flying instructor Lieutenant Tsao from Peking to Tsinan.



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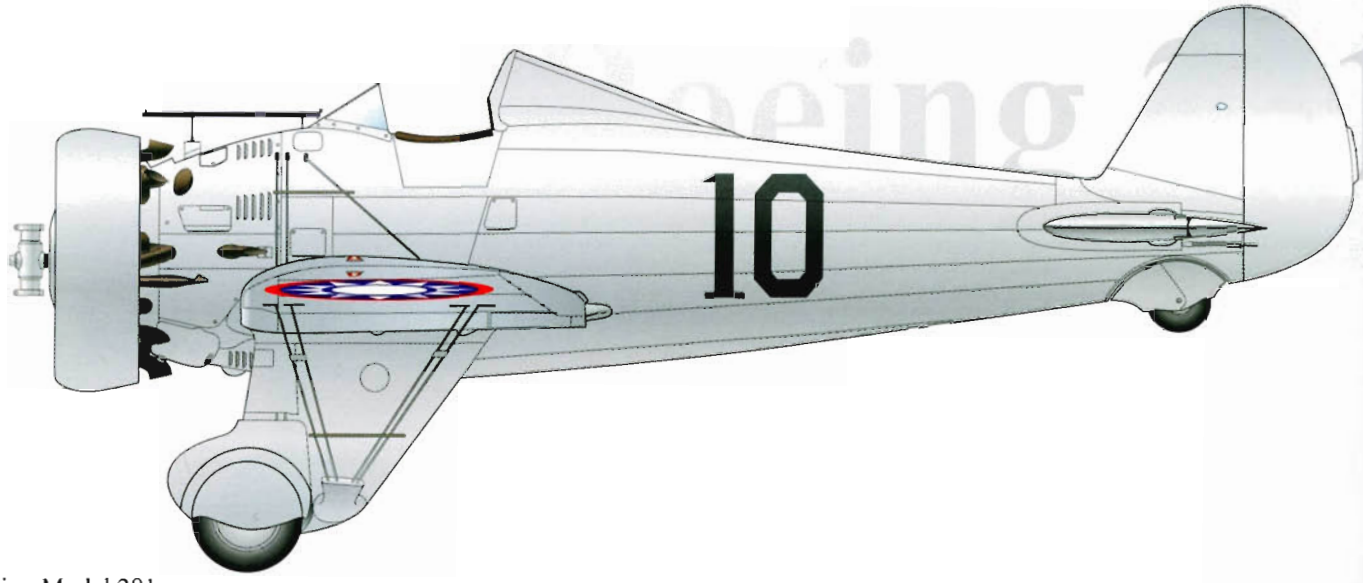
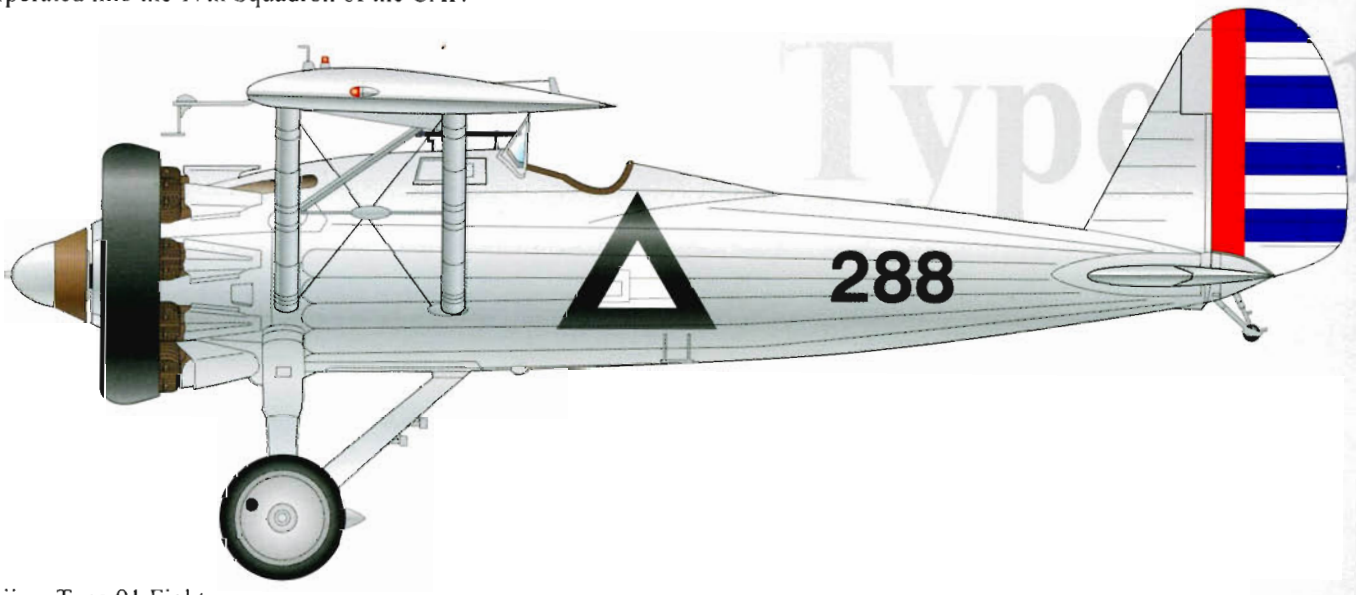
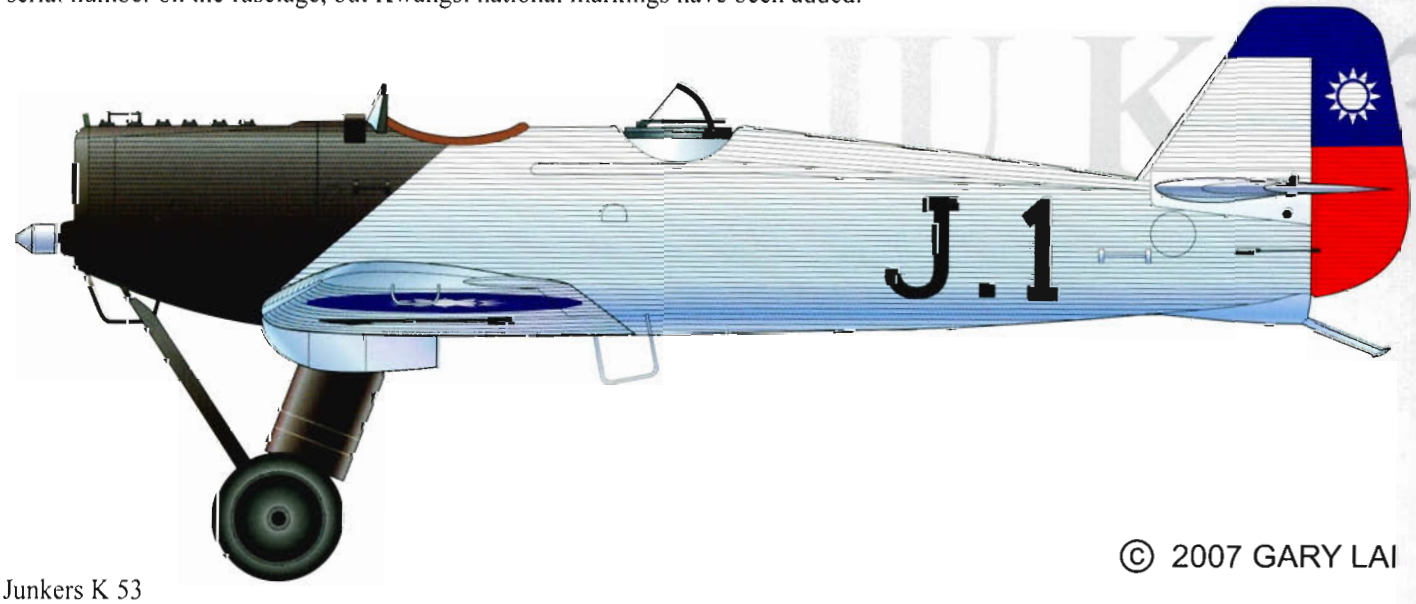
R-1 (DH 9A)
R-1 "Shan Chung 1", a Soviet-built copy of the Airco DH 9A. Several were delivered to the Canton Air Force in the mid-1920s.



Boeing Model 281
Early in 1936 ten Boeing Model 281 fighters arrived in Canton. They had been purchased by the local government, but were later incorporated into the 17th Squadron of the CAF.



Nakajima Type 91 Fighter
A number of Nakajima Type 91 Fighters were acquired for the Kwangsi Air Force in 1934-35. This one still has its original Japanese serial number on the fuselage, but Kwangsi national markings have been added.



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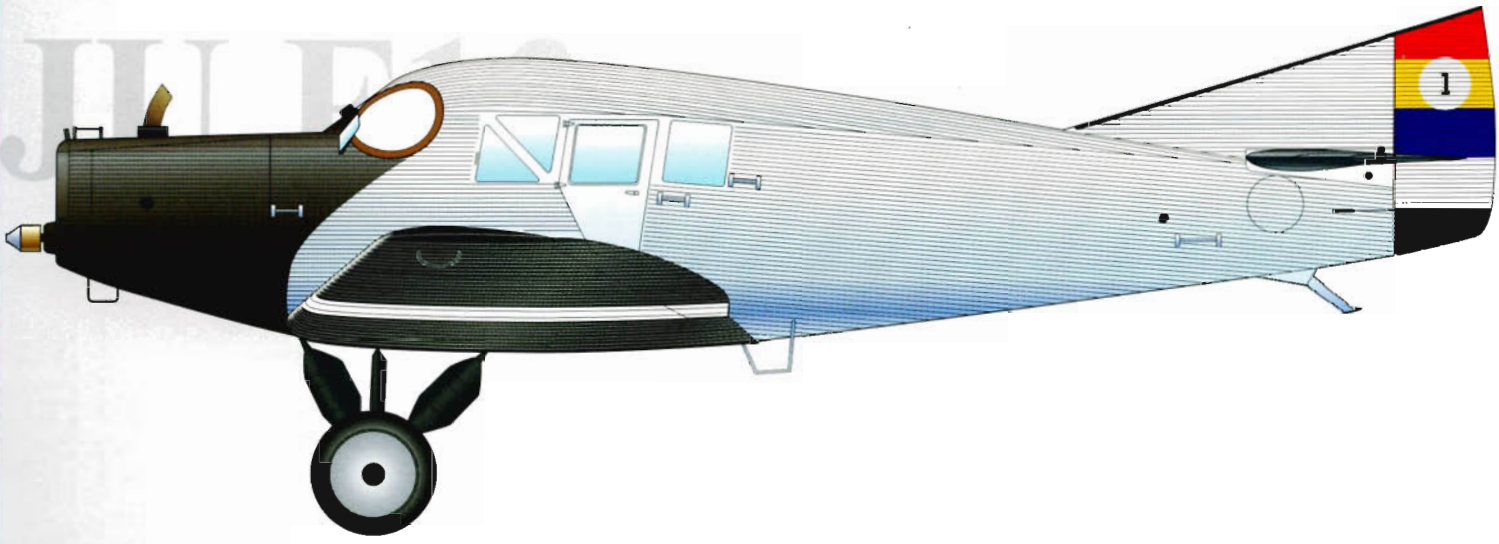
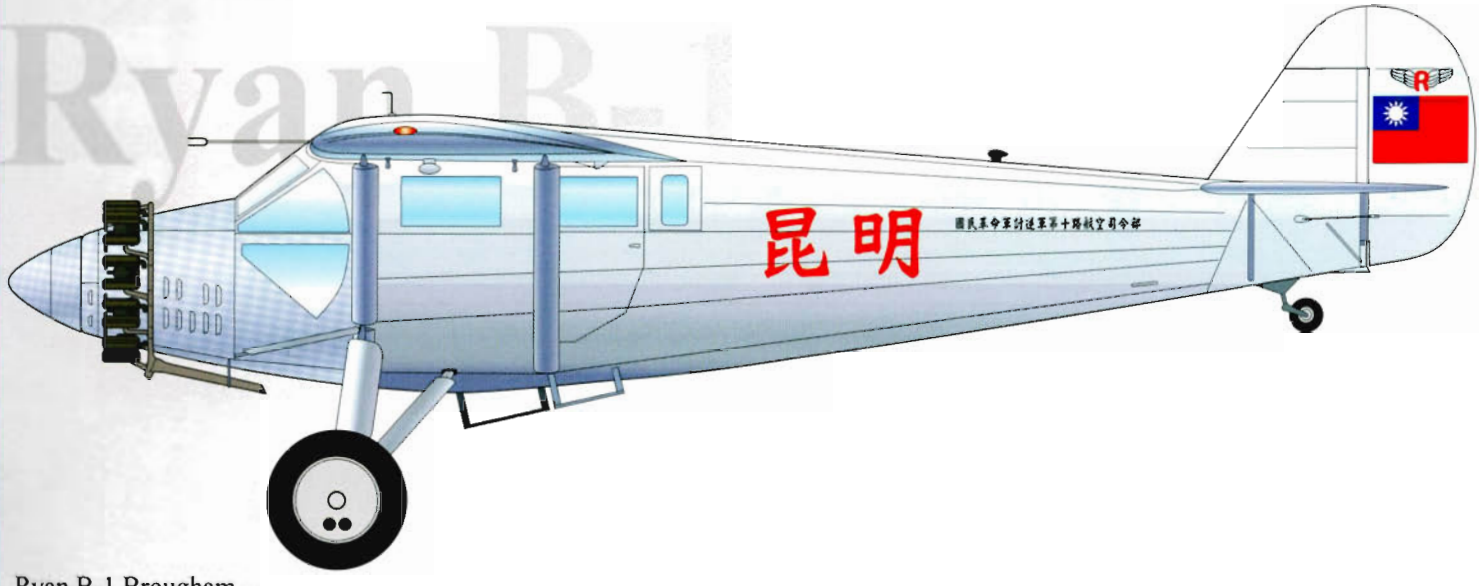
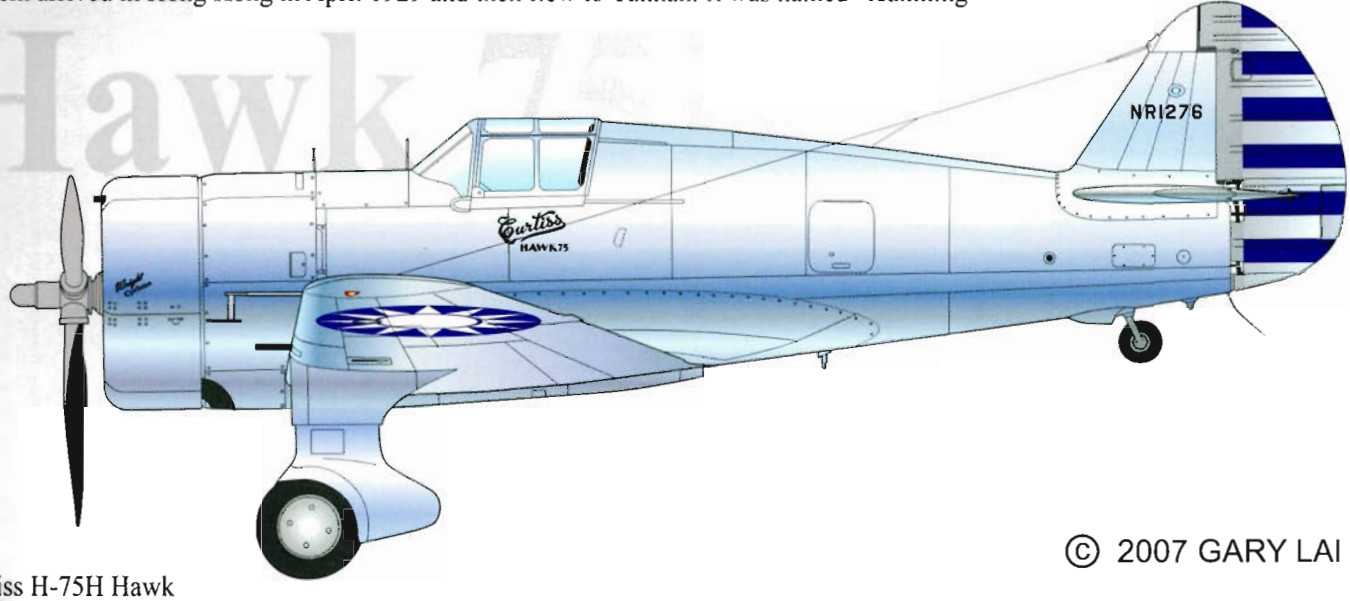
Junkers K 53
Junkers K 53 J.1 had originally served with the Shantung Air Force and was transferred together with nine others of the same type to Mukden in 1928. It is seen here in the markings of the Manchurian Air Force.



Junkers F 13
Several Junkers aircraft were acquired by the Shantung Air Force and based at Tsinan. This Junkers F 13, serial number 1 (probably c/n 774), was delivered in January 1927. Other F 13s were used in Canton, Nanking and Shansi, and a number served with Eurasia.



Ryan B-1 Brougham
Ryan B-1 Brougham "Kunming" of the Yunnan Air Force. A representative of General Lung Yun ordered two Ryan Broughams. One of them arrived in Hong Kong in April 1929 and then flew to Yunnan. It was named "Kunming"



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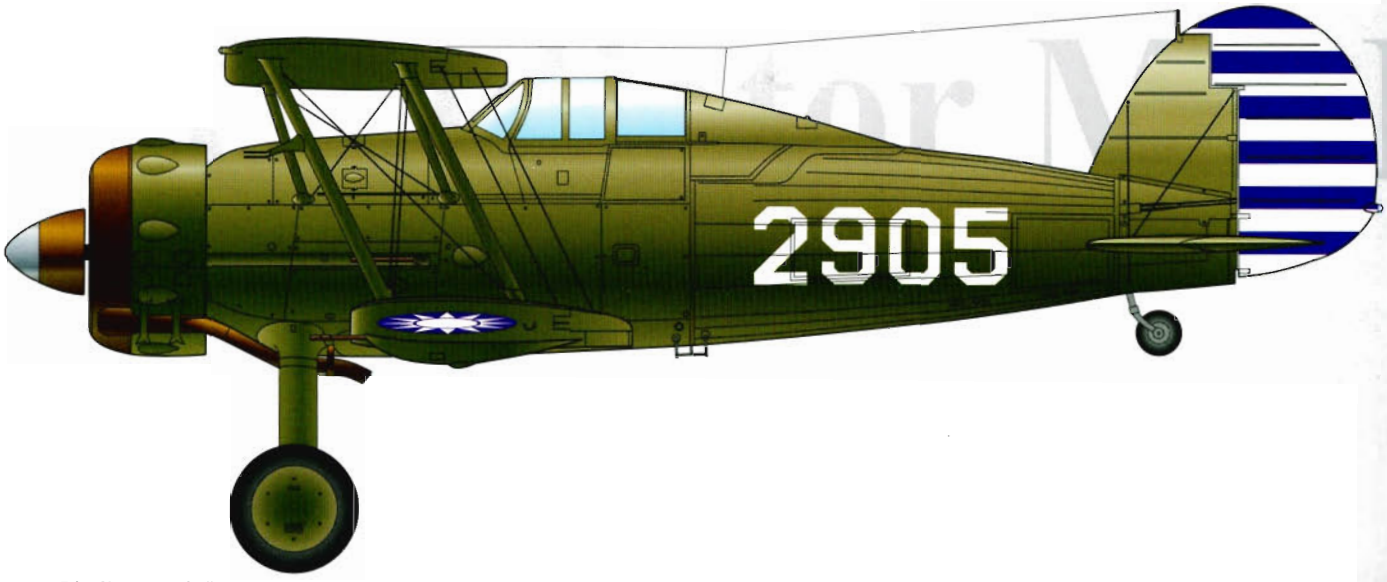
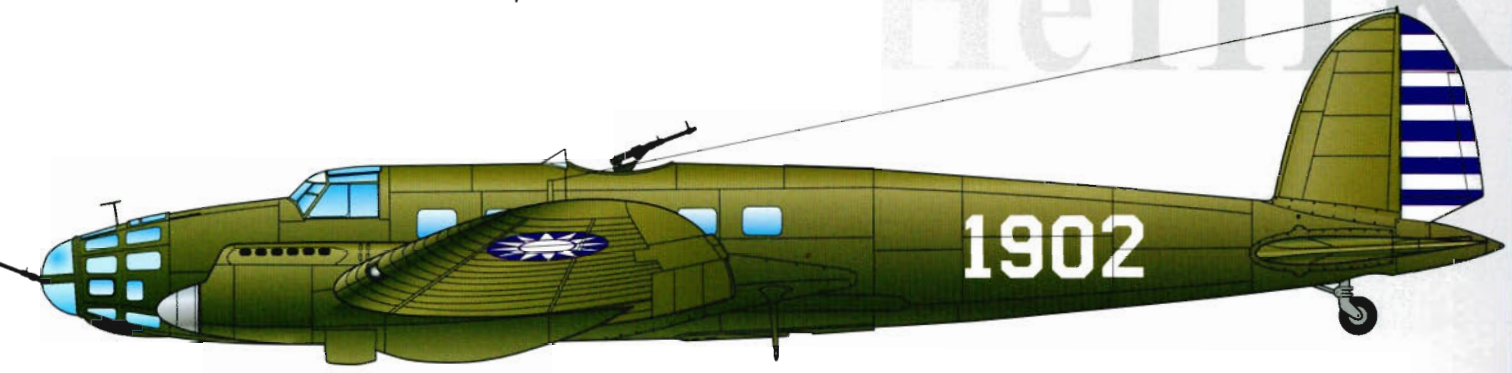
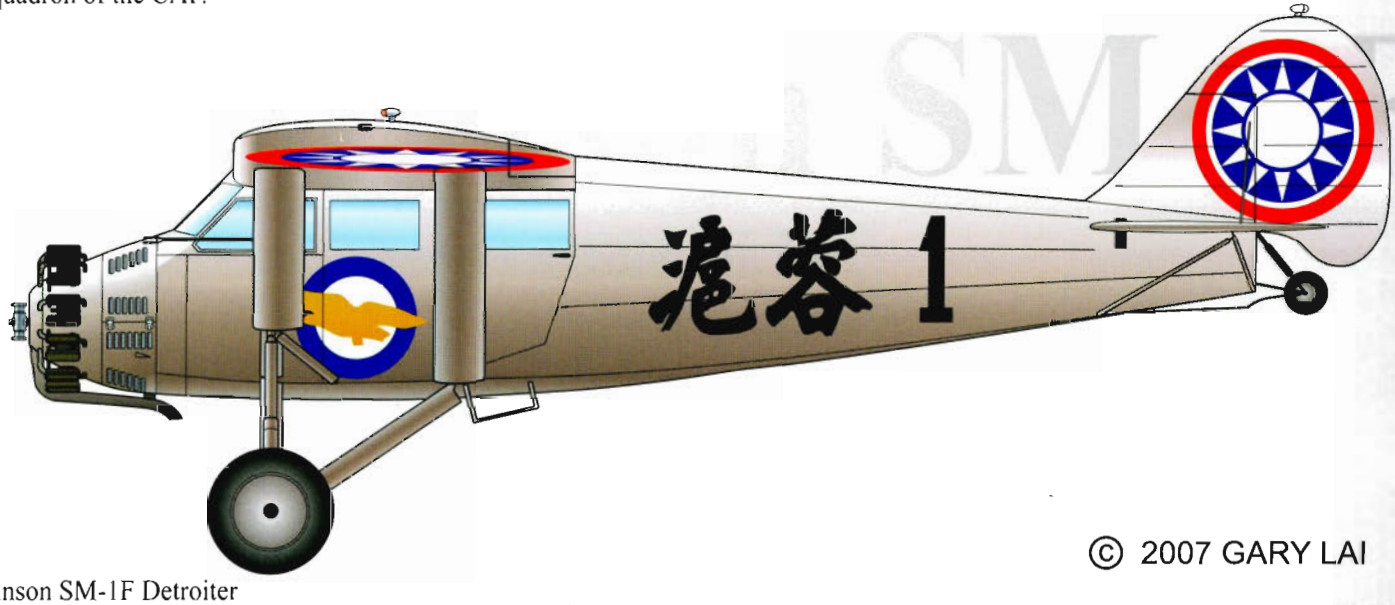
Curtiss H-75H Hawk
Curtiss H-75H Hawk NR1276 (c/n 12327). This aircraft was sent to China in June 1937 for demonstrations and was flown by company pilot Peter Brewster. It was bought for the CAF and another 30 H-75Ms were ordered.



Gloster Gladiator Mk I
Gloster Gladiator Mk I s/n 2905 of the 29th Squadron. In 1937-38 a total of 36 fighters of this type were delivered to the CAF. They were assigned to the 17th, 28th and 29th Squadrons.



Heinkel He 111K
Six Heinkel He 111 bombers were ordered by the Canton Government in 1935. When delivered in 1936 they were assigned to the 19th Squadron of the CAF.



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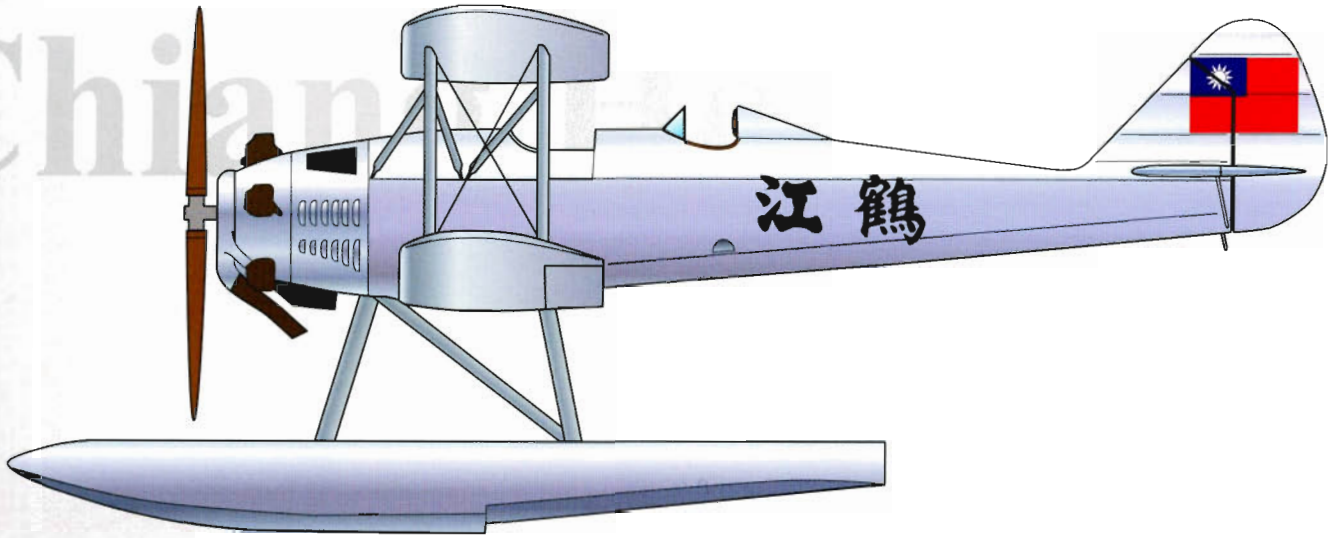
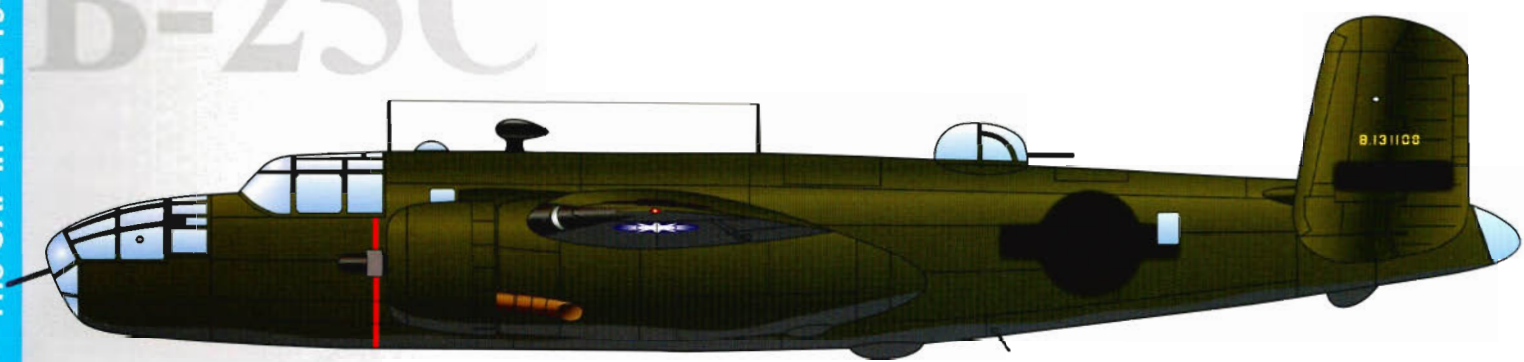
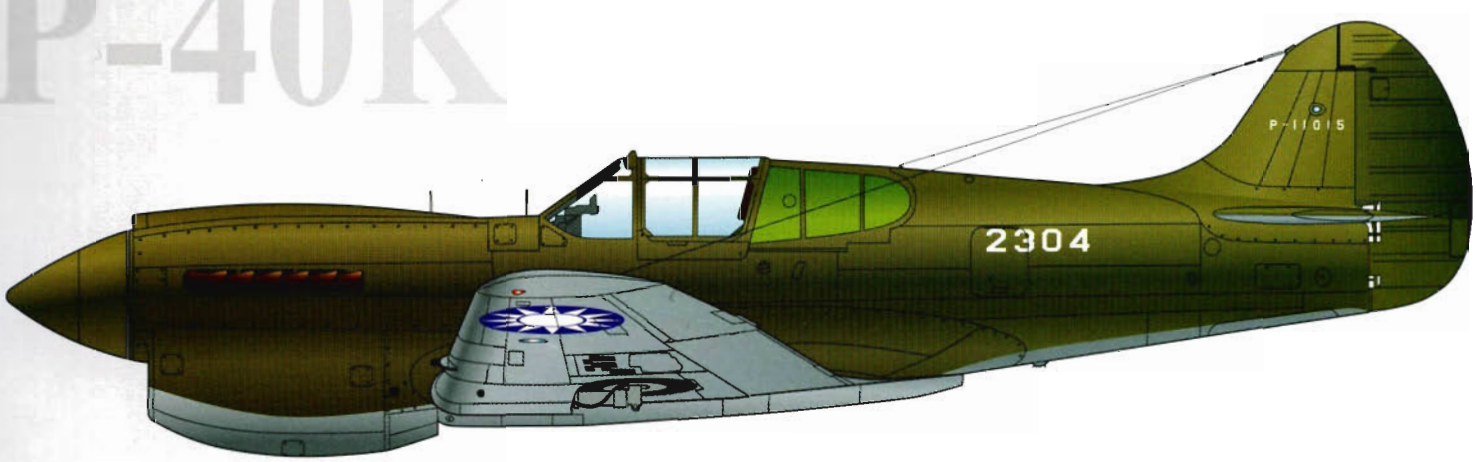
Stinson SM-1F Detroiter
The Ministry of Communications in Nanking ordered four Stinson SM-1F Detroiter transports, which arrived in May 1929 and were marked with military national insignia. This is "Hu-Jung 1" (short for Shanghai-Chengtu No.1).



Keng-1 "Chiang Ho"
"Chiang Ho" was one of several aircraft designed and built by the Chinese Navy. In October 1931 the Naval Air Establishment in Shanghai completed two examples of the Keng type: "Chiang Ho" (River Crane) and "Chiang Feng" (River Phoenix). For a period aircraft of the Chinese Navy carried the national flag on the tail.



North American B-25C Mitchell
North American B-25 Mitchell s/n B.131108. The B-25 was first used for training in India, by one squadron of the Composite Wing (CACW) in China and by the CACW in India. Crews of the 1st Bomb Group (1st, 2nd, 3rd and 4th Squadrons) converted to the B-25 at Karachi in the autumn of 1943 and were attached to the CACW.



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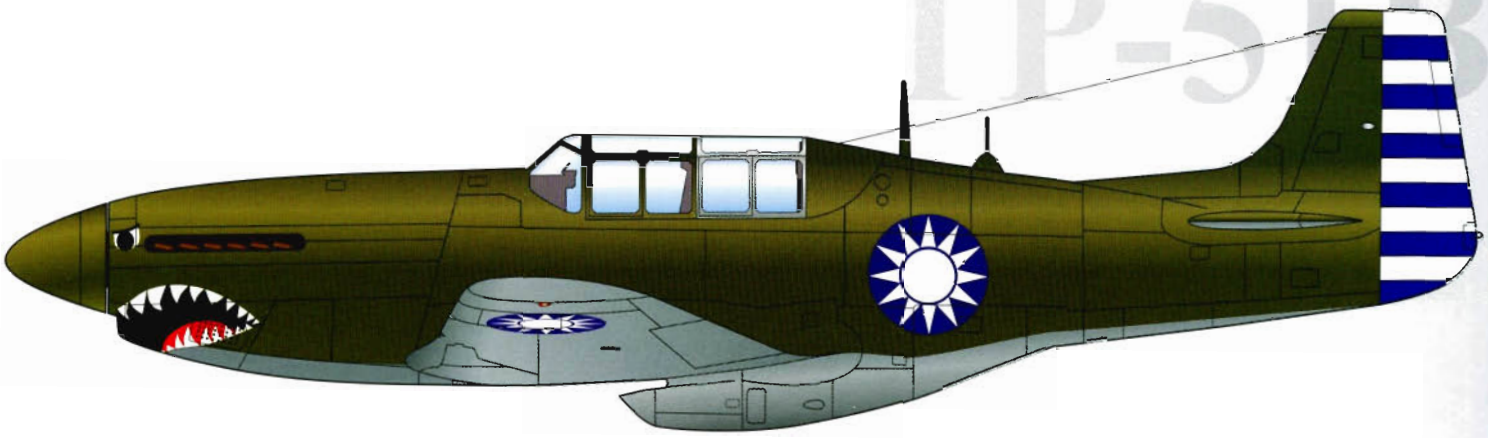
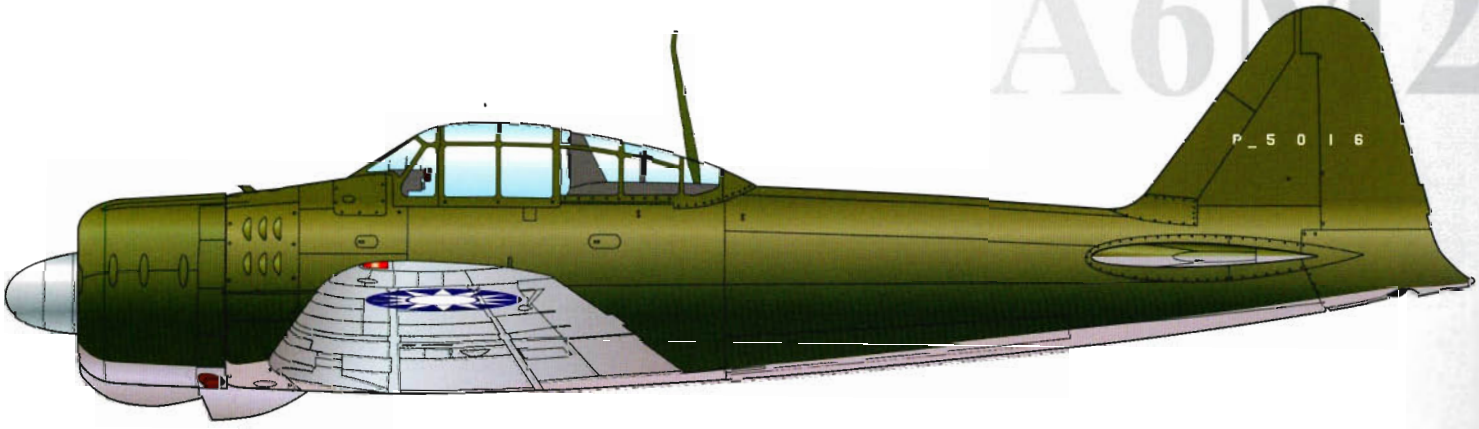
Curtiss P-40K Warhawk
The first Curtiss P-40K Warhawks reached China in 1943. This example is from the 23rd Fighter Squadron, 4th Fighter Group.



North American TP-51B Mustang
This ex-23rd Fighter Group North American TP-51B Mustang two-seat trainer was assigned to the 11th Fighter Group, CAF, at Hsien during late 1944.



Mitsubishi A6M2 Zero
This Mitsubishi A6M2 Zero fighter (c/n 3372, s/n V-172) was captured on 26 November 1941. It was rebuilt at Liuchow and painted with Chinese insignia and serial P-5016. After evaluation it was sent to the United States early in 1943 for further testing.

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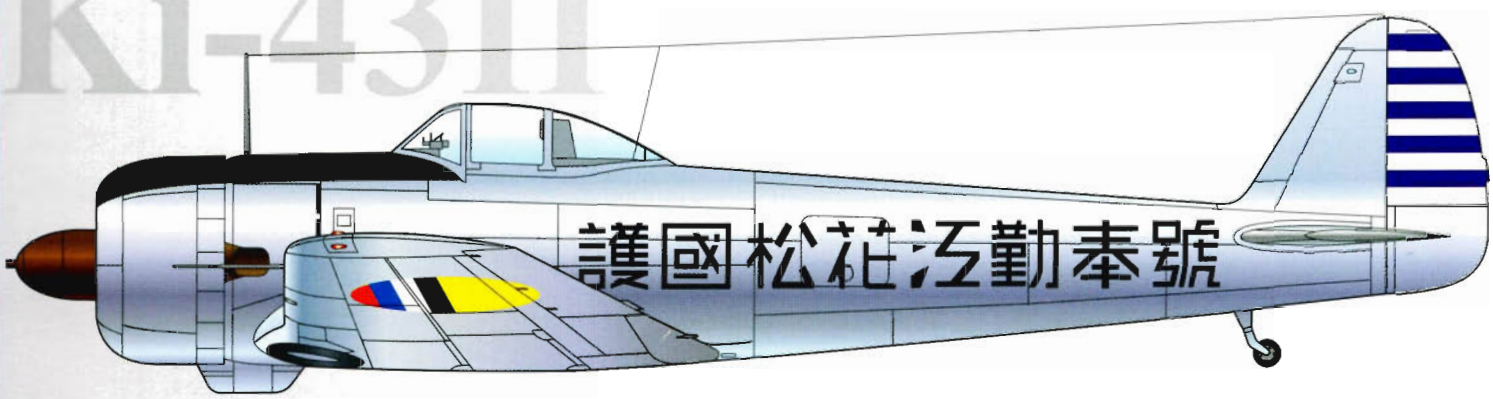
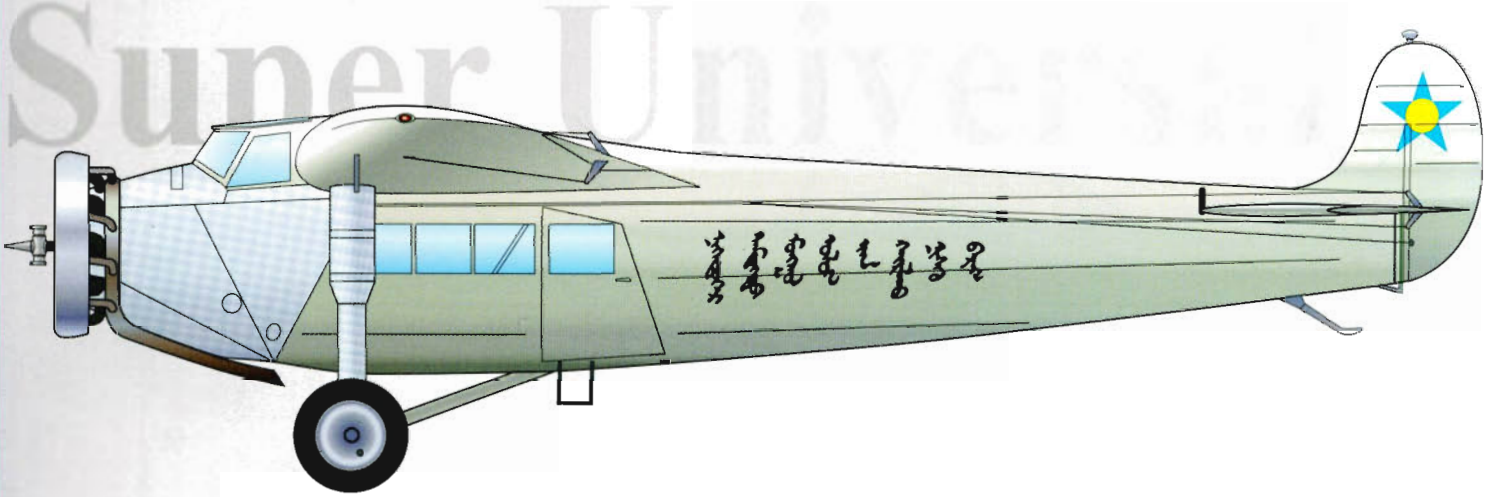
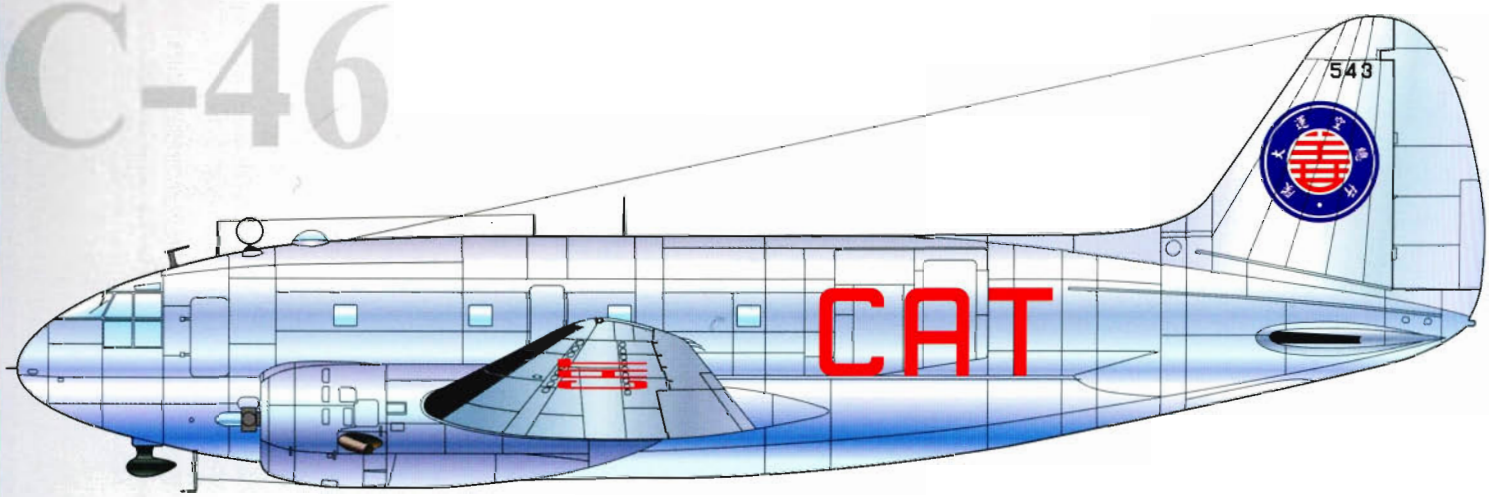
Tachikawa Ki.9 Kai
Tachikawa Ki-9 Kai of the Japanese-supported Nanking Air Force. The nucleus of a Nanking Government air force, in the form of three Ki-9 trainers, entered service on 15 May 1941 when a ceremony was held. Notice Nanking Air Force national insignia.



Nakajima Ki.43-II Hayabusa
Like several other aircraft of the Japanese-supported Manchukuo Air Force Nakajima Ki.43-II Hayabusa fighters wore presentation slogans on their fuselage sides. They were delivered in 1944.



Fokker Super Universal
In July 1935 Manchukuo presented a Manko Type 1 (Fokker Super Universal) to Prince Teh Wang of Inner Mongolia. The Inner Mongolian Government operated other examples of this type as well, including this one named "Inner Mongolia Army No 1".



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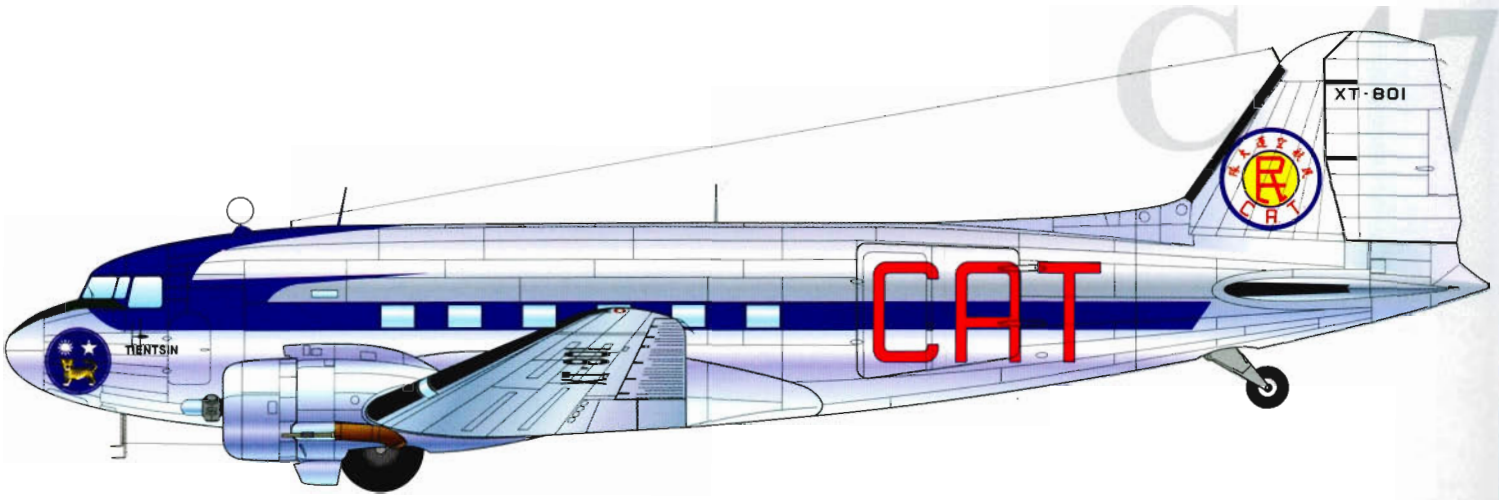
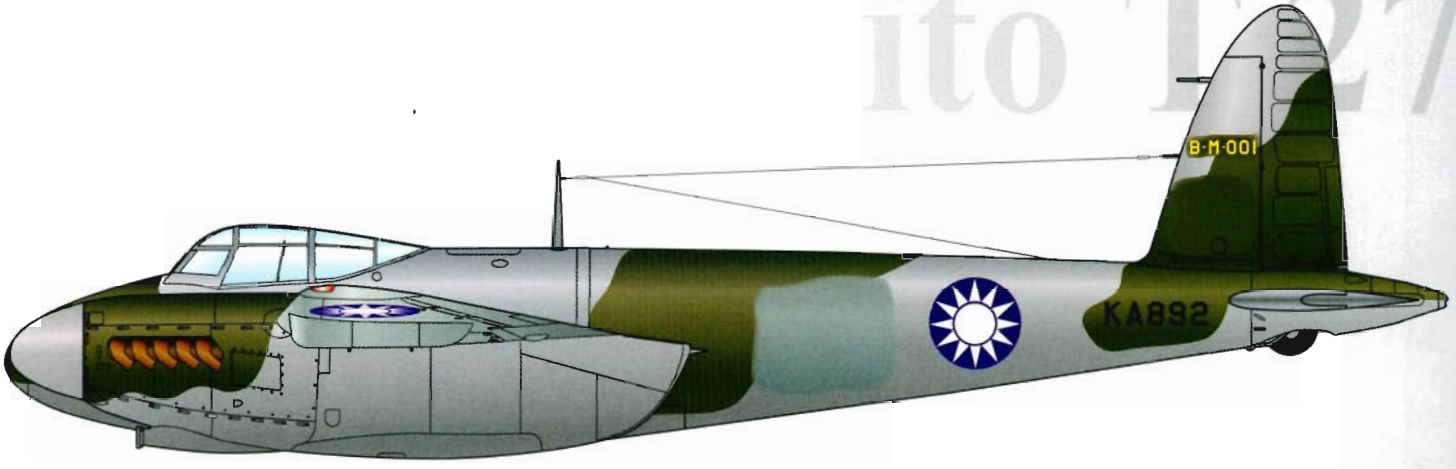
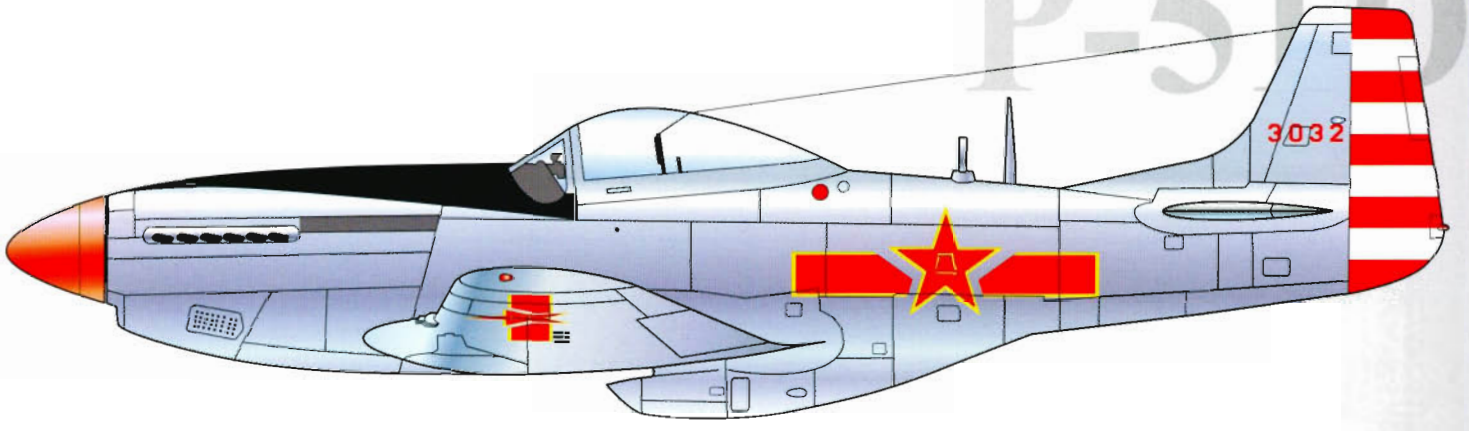
Curtiss C-46 Commando
Curtiss C-46 Commando s/n 543 of Civil Air Transport (CAT). The CAF received 24 C-46As, C-46Ds and C-46Fs under Lend-Lease in 1945 and many more were delivered to China from April 1946 and later during the Civil War. Civil Air Transport (Min-hang k'ung-yun tui, CAT) was founded in May 1948 and operated about 30 C-46s.



Douglas C-47 Skytrain
Douglas C-47 Skytrain XT-801 "Tientsin" of Civil Air Transport (CAT). Starting in 1942 many transports of this type were delivered to China for use by CNAC and by the CAF. XT-801 was the first of about 15 operated by Civil Air Transport (CAT).



de Havilland Mosquito T Mk 27
de Havilland Mosquito T Mk 27 s/n B-M-001 (KA892). A total of 205 de Havilland Mosquito fighter-bombers were acquired from Canada in 1948 for the 1st Bomber Group. Most were FB Mk 26s, but many were T Mk 27 and T Mk 29 trainers and there were also a few B Mk 25s and T Mk 22s.



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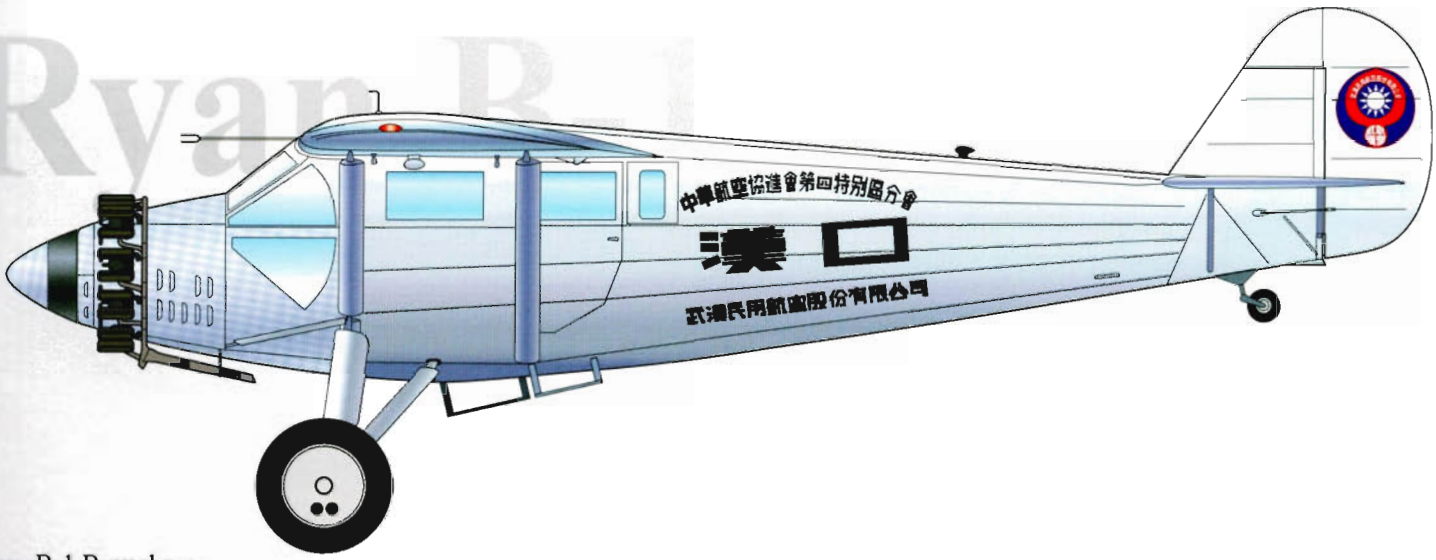
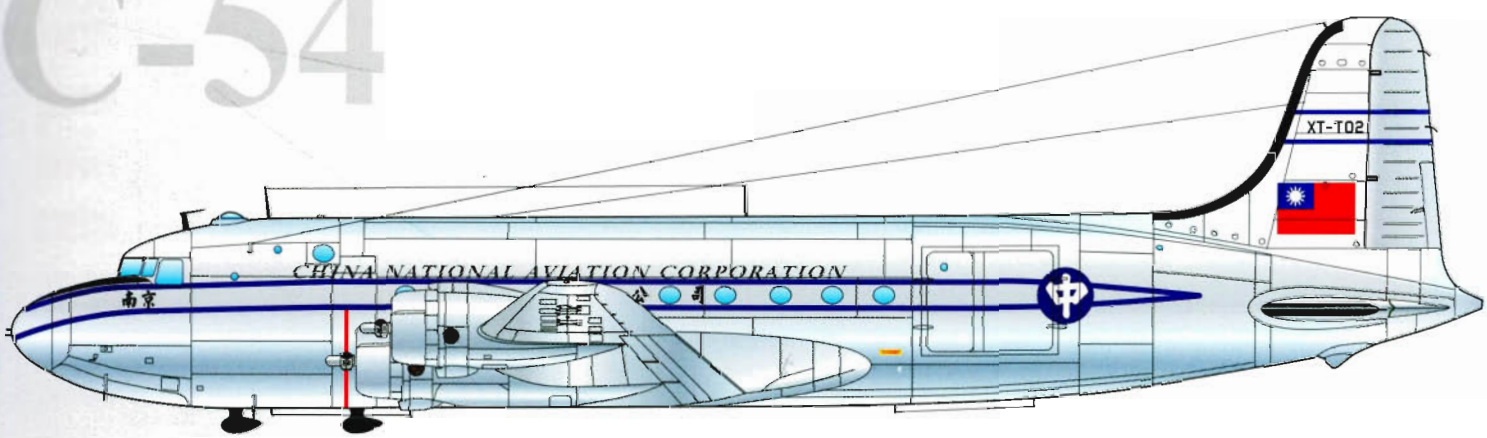
North American P-51D Mustang
North American P-51D Mustang s/n 3032 of the PLAAF. Many P-51s were delivered to the CAF and a number were captured and placed in service with the PLAAF, which used both P-47D and P-51D and P-51K fighters.



Ryan B-1 Brougham
Ryan B-1 Brougham "Hankow" of the Wuhan Commercial Aviation Company, which was founded in November 1928. An order was placed for five aircraft of this type (c/ns 168-172) and at the end of January 1929 they had arrived in Hankow and were erected and tested. They were late taken over by the Nanking Air Force.

Junkers A 50 Junior
An example of the Junkers A 50 Junior (c/n 3531) was sent to China in 1930 for demonstrations. It was later presented to the China Aero Club at Shanghai and named "T'ien Ch'u No 2" in March 1934.



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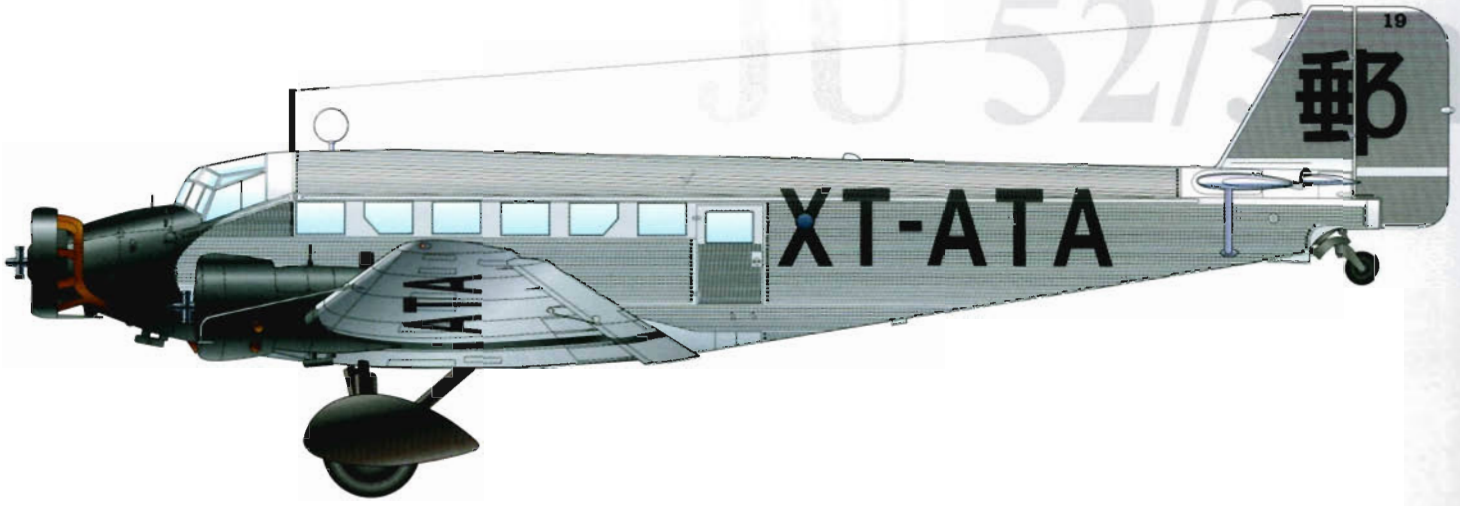
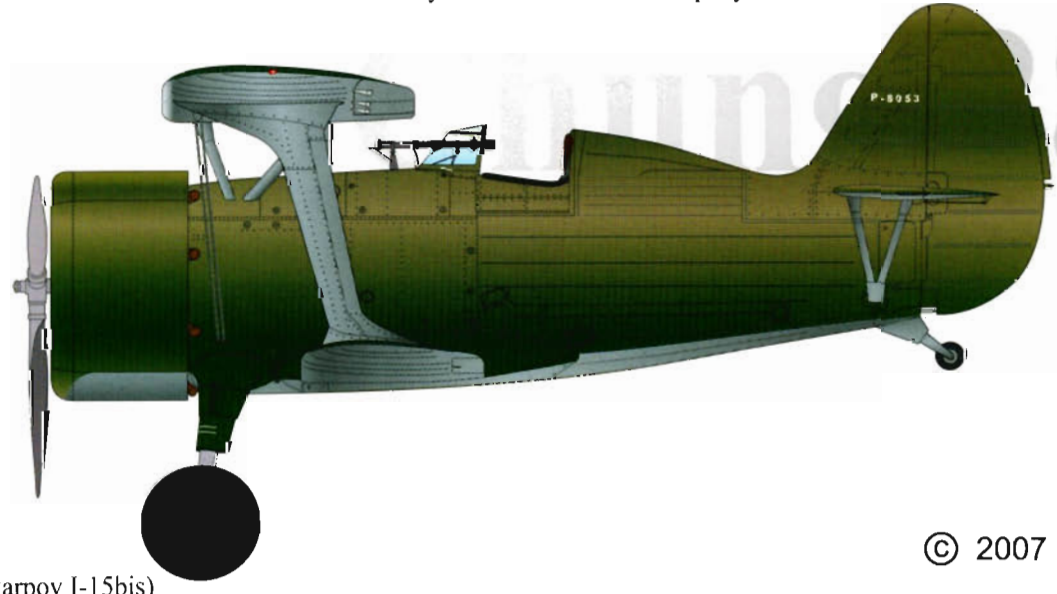
Douglas C-54
Douglas C-54 XT-T02 "Nanking" of CNAC. Seven Douglas C-54 four-engined transports (registered XT-T01 to T07) were acquired by CNAC and delivered in 1946-47. Notice "Chung" marking on the fuselage and national flag on the tail.



Junkers Ju 52/3m
XT-ATA (c/n 5472), EURASIA No 19, was one of ten Junkers Ju 52/3ms operated by Eurasia from 1935. In 1943 it was taken over by the Central Air Transport Corporation (CATC).

Stinson SR-9D Reliant
Stinson SR-9D Reliant "Niulang" of the South-Western Aviation Corporation (SWAC), probably c/n 5250 or 5251. This was one of nine Stinson Reliants of different models that were used by this Canton-based company.



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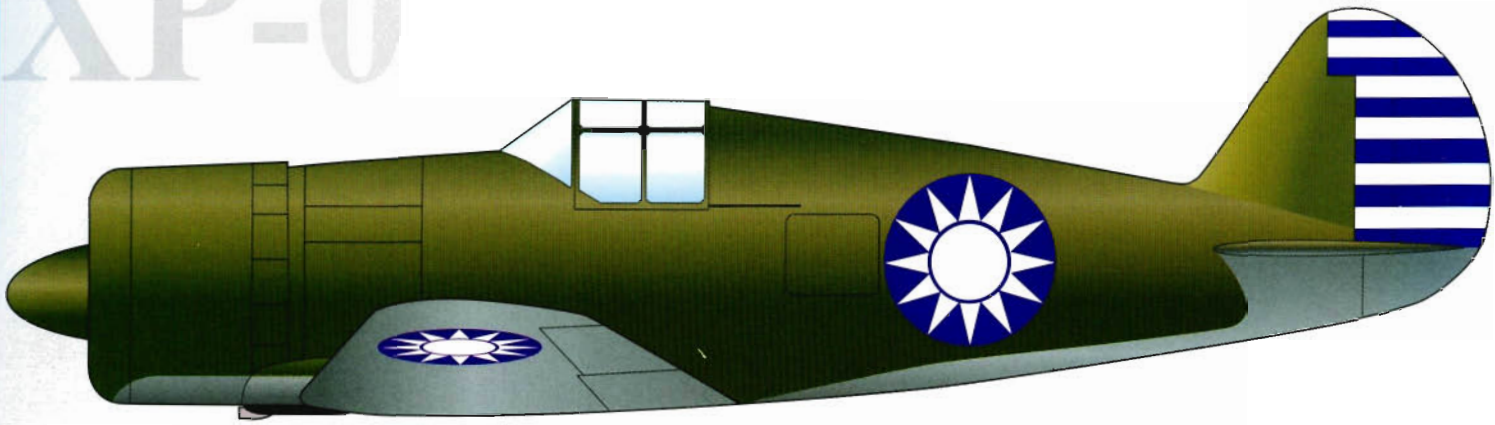
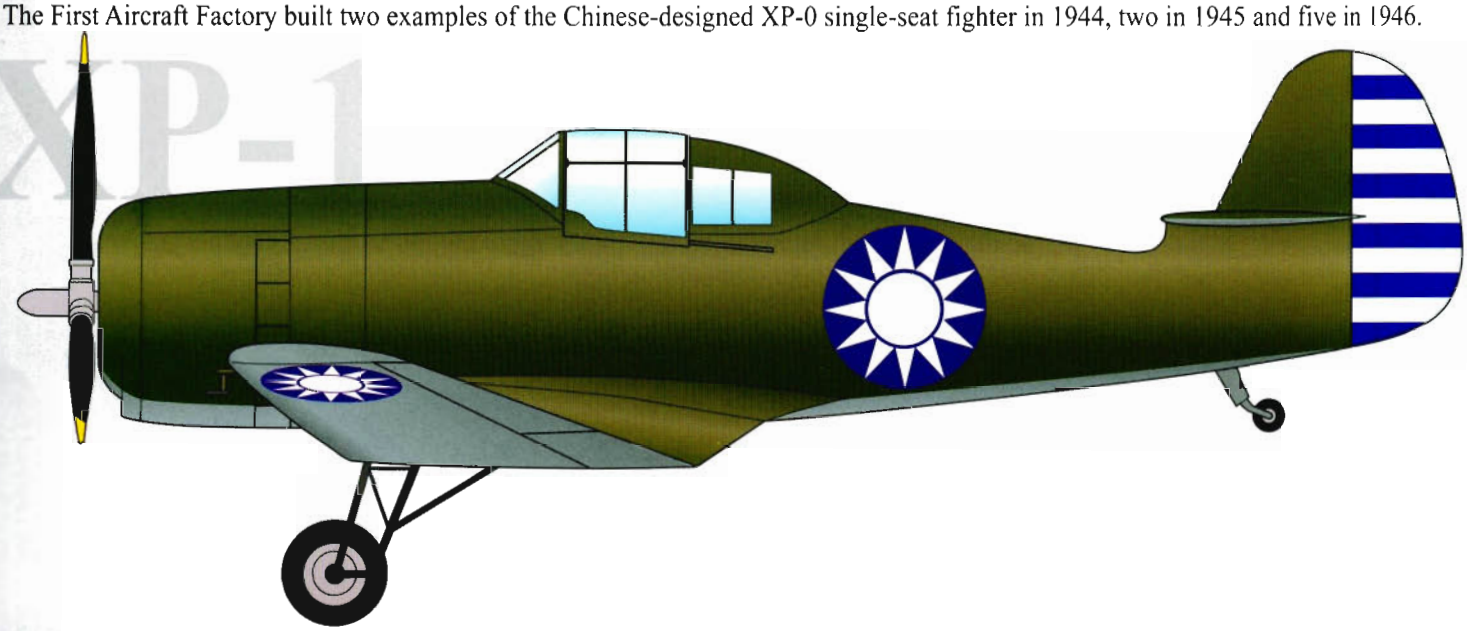
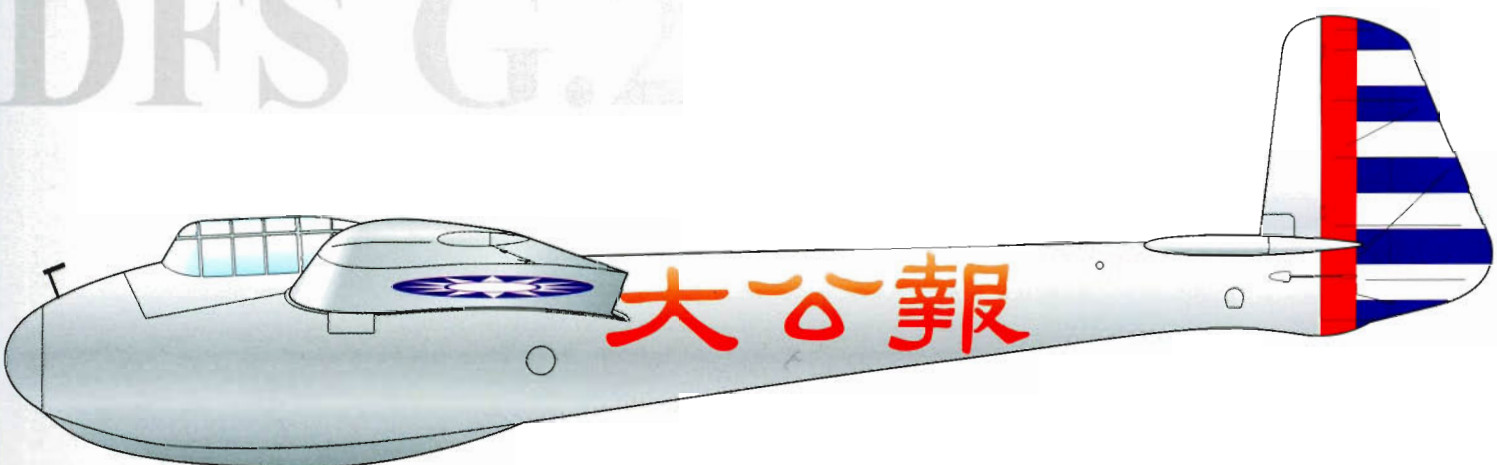
Chung 28B (Polikarpov I-15bis)
Chung 28 Yi (Chung 28B) s/n P-8053. The First Aircraft Factory at Kunming produced a number of Chung 28 Yi fighters in 1941-43. They were modified copies of the Polikarpov I-15bis.



XP-0
The First Aircraft Factory built two examples of the Chinese-designed XP-0 single-seat fighter in 1944, two in 1945 and five in 1946.



XP-1
The Yench'u (Experimental Pursuit, XP-1) fighter prototype was completed in 1943, but crashed during the first test flight.



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DFS Rhonsperber
This DFS Rhonsperber sailplane was delivered in 1939. It was named after the "Ta Kung Pao" newspaper.

CHINESE AVIATION is a detailed study of aviation in China. More than 400 different types of aircraft from many of the world's aircraft manufacturing countries were used in China during the period before 1949! In addition a number of types were developed and produced inside China. Chinese aviation was in fact much more extensive and diversified than has previously been generally understood.

The main scope of the book is aircraft and aviation in China during the period prior to 1937. Chinese Air Force operations, especially during the war with Japan, have been treated elsewhere and are normally not detailed here. For the 1937-1949 period the focus is mainly on aircraft acquisition, organisation and the general development of aviation in China.

All the provincial air forces, the air force of the Central Government and the naval aviation service, the airline companies and aircraft factories are described in detail, as are all the aircraft that flew in China, from the Aeromarine 39B and Aichi AB-3 to the White PT-7 and the Yakovlev UT-2. There are more than 350 photos, numerous maps, aircraft inventory lists and tables, and several pages of colour profiles. A special chapter deals with aircraft markings and national insignia and there are tables with aircraft registrations.

The book is based mainly on original American, British, French, German and Russian archive documents, as well as long forgotten contemporary newspapers, magazines and other sources.

CHINESE AVIATION is the result of many years of research and contains a wealth of previously unknown information about aviation in China.

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